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BRITISH MEDICAL JOURNAL

LONDON SATURDAY FEBRUARY 11 1961

British Medical Association

ONE HUNDRED AND TWENTY-NINTH ANNUAL MEETING, AUCKLAND, 1961

President's Address

MEDICINE AND HEALTH ON A COMMONWEALTH BASIS

BY

Sir DOUGLAS ROBB, C.M.G., M.D., Ch.M., F.R.C.S., F.R.A.C.S., F.A.C.S.(Hon.)

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The British Medical Association, forgathering for its 129th Annual Meeting in Auckland, finds itself further from home than ever before. Nevertheless, we hope it may feel really at home as it meets with the New Zealand Branch—so great are the affinities of origin and outlook between us. It has happily brought home again, as the immediate Past-President, our distinguished fellow-countryman Arthur Porritt, whom we are proud and delighted to welcome, along with other homing New Zealanders and visitors from many parts of the Commonwealth.

I feel it appropriate at the opening of a great medical gathering such as this to reflect for a moment upon the nature of our calling. The essence of it surely is compassion—a matter of the heart, whereby we seek to help the injured, the sick, and the disturbed. However much we may become absorbed in means to serve this end, we do ill to lose sight of it. For all our science, our knowledge, our skill, and the various organizations that we build up in order to apply these things are of a secondary nature. They may be vastly impressive, and may overshadow the more elementary act, but periodic recourse to the original vision, which I think all of us experienced as students, is a good thing and redeems our work from being just another task or occupation.

In his Presidential Address at Torquay in 1960,[1] Sir Arthur referred to the growing implications for the Association of its Commonwealth relations. He was exploring ways in which the service of medicine could gain unity in the great variety of its experience, and in which it could better convey its beneficent message to all the sorts and conditions of men that it has to serve.

Those of us who are living our lives in distant Commonwealth countries, returning at critical periods to the Homeland for refreshment and inspiration, have developed some conception of the possibilities of a fuller interchange—an interchange to be modified, no doubt, as the participants grow and mature, as Canada and Australia have already done. My own outlook was enlarged last year, when I had the honour to travel in Africa as Sir Arthur Sims Commonwealth Professor, and visit the medical schools and hospitals of the Union, the Federation, East Africa, and Ethiopia. The appointment concluded with a round of visits to the surgical departments of six British medical schools, and seeing the working of the Royal College of Surgeons a little more intimately from the vantage-point of the guests' flat. Such a tremendous experience could, I am quite sure, be paralleled in India, Pakistan, Malaya, and other Asiatic countries and in other countries within the Commonwealth. It showed what a great deal remained to be done, in service, in teaching, and in research.

The Theme

What I would like to do is to put all these things together, and to outline a picture of what medicine and health would look like if we could handle them, not as at present on a series of national bases, but on one single Commonwealth basis. The fact that such a conception must belong to the future need not necessarily deter us. I do ask to see the distant scene, believing that if we have a clear idea of the goal before us we are more likely to take reasonable and useful steps towards it in the meanwhile.

The first thing we see in this Commonwealth picture is medical *service*, our fundamental task, most unevenly distributed. In certain parts it is quite a struggle for a doctor to get medical work to do, and a proportion of what is done is of a trivial nature—unimportant medically. In other parts there are large numbers of human beings with little or no prospect of service, and where buildings and equipment are pathetically inadequate to the demands that are or should be made on them.

In the *training* of workers in medical, nursing, and ancillary services, and at all levels—school, university, undergraduate, and postgraduate—again we recognize the grossest inequalities. Some countries are well provided for—others have a great deal less than the bare necessities. Within the orbit of the more mature countries we see the United Kingdom cutting down the number of students to be accepted annually for medical training under the influence of the Willink report, and at the same time relying on large numbers of graduates from India, New Zealand, and elsewhere, during their postgraduate period, to keep the hospitals going. In New Zealand, on the contrary, one of the chief factors favouring the establishment of a second medical school is the hope that the increased number of graduates that

would result would help to staff the hospitals of the country, impoverished as they are by the very process which assists those in the United Kingdom. Clearly, the more developed countries can assist the less and should be making every effort to do so; but how is this best done? By receiving trainees from abroad, or by taking part in building and staffing schools in the outlying territories? Was New Zealand wise, for example, in contributing £1m. to the All-India Medical Institute in New Delhi under the Colombo Plan, when she finds it difficult to provide training on her own ground for her own students and to fill her own needs? Decisions on the costly business of medical education could be made on a wiser basis were it possible to view the Commonwealth task as a whole.

In *research* also there are surely many opportunities for mutual advantage within the Commonwealth. It is not only a matter of the distribution of money and talent, and the dire need for relief from some of the plagues, but the great help that can come from the fresh look at an old problem by someone whose past experience may well include analogous situations. What trophies are waiting to be won in Africa—for example, the problems in nutrition, in trauma, the unanswered riddles in cancer, intestinal obstruction, infectious disease, and parasitology. The road to the prevention and cure of cancer of the gullet in London or in Auckland may well run through Uganda or Zululand.

Can we imagine, then, an all-embracing medical plan for service, for teaching, and for research over the wide Commonwealth?

Present Efforts

Many past and current endeavours point the way. The people of Great Britain and the Commonwealth have a great and laudable tradition of interest in underdeveloped lands and of service to them in medicine and in many other fields. I am full of admiration for those who are carrying on this task in Africa and elsewhere at the present time, whether under government, university, military, commercial, or religious auspices. Conditions of all sorts are often uncongenial, climates hard, and facilities poor, and I would feel that they require, and must usually evoke, in such men and women a missionary-like zeal for service. At least, however, they can feel they are fully extended and that their talents are being used to full advantage—there is little time for the frivolous or the trivial or the meretricious task. Undoubtedly these labours have represented one of the finest contributions towards the conception of the brotherhood of man that the world has seen. What we would like to adumbrate is the modern development of this service—greatly extended, made more consciously effective, and shorn of undesirable elements such as paternalism and patronage. Any assistance given must be the consequence of an expressed desire for it. It must be, as C. P. Snow says, entirely a matter of help on a basis of mutual respect and equality, coupled with a readiness to retire as soon as the need is met and the developing country can manage on its own.

Voluntary associations and mutual assistance plans may be mentioned—Great Ormond Street and Makerere College in Uganda; Bristol and East Africa; and the proposed sponsorship by Birmingham University of the new medical school that is being planned in Salisbury, Southern Rhodesia. The Conference called in November, 1958, by our own Association,[7] under Sir Arthur Thomson, was admirable in facing the difficulties in the way of filling medical posts overseas. The *Lancet* has discussed the problem,[1-6] and the conception of "proleptic" appointments in the United Kingdom put forward by Professor Charles Wells is a potentially valuable way of ensuring a period of overseas service by a senior registrar before he takes up his full appointment in the United Kingdom.

Professor Julian Taylor's filling of the Chair of Surgery in Khartum after retiring from University College Hospital sets an admirable example that I know is making other senior men think. Orthopaedic training throughout the Commonwealth should be greatly enriched by the plans of H. J. Seddon, arising as they do from the experience gained by him and Professor Moncrieff and others in their visits to Colonial territories, sponsored by the Colonial Office and the Nuffield Foundation. There are many others that I have not mentioned, and more again that I have not heard of. It is in no mood of depreciating these efforts—their motive, their scope, or their methods—that I suggest that something much more comprehensive is needed. Let us build on these and other plans, and in their spirit, but let us glimpse the full picture.

Mechanisms Needed

In order to give effect to this conception, which may well seem at first sight so visionary as to be quite impracticable, it may be useful to think of two stages—the developmental and the more complete.

Developmental Stage

In the developmental phase one could imagine a considerable multiplication of arrangements like the present voluntary ones. One could almost think of an association or a club of which hospitals, universities, or even governments wishing to take part in the scheme could become members. Certain conditions would need to be laid down, such as minimum establishments in, say, an African hospital, so that any person taking up duty there would not only not waste time, but also be so placed as to make his most effective contribution. There would need to be enough space and facilities such as library and photographic services, and enough nursing, secretarial, and follow-up staff, to be fully effective. It is clear, of course, that these conditions—often in the hospitals that most need the help—do not now pertain. In the more developed countries also, proper provision of facilities for the reception and utilization of incoming exchange men is needed—again, that is by no means always present now. For example, in Auckland here we would need to set up university units at least in medicine, surgery, and pathology to add to our existing one in obstetrics and gynaecology, as a guarantee of good conditions for the visitors, should we seek to play our part.

A system of reliable recommendation by responsible heads in government or institutions would be required, based as much as may be on a knowledge of the person to be sent and an awareness of the conditions he would be likely to meet on arrival. Living accommodation at each end should be available so that no delays and frustrations should diminish the great advantages of air travel. It would amount to the provision at both ends of funds and equipment over and above the bare needs (and heaven knows these are bare enough in many countries to-day) to allow a percentage of staff and trainees to be exchanging abroad. Additional needs would be a central secretariat which, in time, would

become a big affair, and a certain capital sum for management and for backing at least the initial stages. London would be the obvious place for the setting up of such a secretariat. I would think the B.M.A. headquarters would be a good place, building on existing experience and contacts. No doubt the time might come when that would not be large enough. Outlines for a Commonwealth Medical Association have been adopted recently by the Council of the B.M.A. and were discussed by the Commonwealth Conference here last week. Perhaps these could be developed to meet the need.

That the British Government and others are alive to the needs is shown by the White Paper of October, 1960, "Service with Overseas Governments," and their generous provision of some £12–£16m. a year to give effect to them. The idea is to make it as easy for a Colonial or comparable territory to employ an overseas officer as to pay one of their own number. The money would go towards inducement to go overseas, to children's and education allowances, to pensions, leave passages, and compensation in case of premature retirement. They had already set up in 1957 an Overseas Services Resettlement Bureau, which has done good work in an admittedly difficult if not gloomy situation. The *Lancet* points out editorially, however,[3] that the future may be brighter than the immediate past, and calls on all concerned to understand the problems and assist where possible.

In similar vein Professor Kenneth Hill[9] writes that the chief need in the U.K. is a change of attitude by the hospital and university authorities towards overseas service. Such service is evidence of enterprise, achievement, and power of adaptation, and it should make a man more, not less, worthy of subsequent appointment to a post in U.K. He praises the 1959 Commonwealth Education Conference and the steps taken by it to achieve similar objects in the field of education. On these lines he advocates a Commonwealth Medical Council for the supply of officers overseas and details a code of secondment to be followed by employing bodies in the U.K., and a code of terms of service to be adhered to by the overseas authority.

Similarly in medical research there have been wise provisions made[2] for correlation of activity and continuity of effort between Colonies and the newly independent countries, which forfeit automatically their eligibility to receive funds from the British Government. The recently appointed Tropical Medicine Board under the M.R.C. is to advise the Secretary of State for the Colonies on all medical research in the Colonies financed from the Colonial Development and Welfare Funds, the M.R.C. on all medical research in or for the independent Commonwealth countries financed from U.K., and the M.R.C. on all medical research in or for tropical and subtropical countries financed from its own budget. In this way both the work and the careers of the workers should be better safeguarded, and inducements provided to embark on such a career. Can we discern here the germ of a more effective plan for medical research throughout the Commonwealth? Adherence to such a plan presupposes great insight into the delicate and easily blighted activities under consideration, but we may hope that this is developing.

The More Complete Stage

In a more mature phase the undertaking might reach large dimensions with permanent headquarters and an extensive staff whose business it would be to gain and maintain detailed knowledge of conditions in all places working under the scheme. One would hope ultimately for uniform standards of education for medical, nursing, and ancillary trainees. Here is a tremendous field for co-operation between the General Medical Council and its corresponding bodies overseas, to say nothing of the Royal Colleges of Physicians, Surgeons, and Obstetricians and Gynaecologists. A great deal has been achieved within the United Kingdom, Australia, New Zealand, South Africa, and Canada in these respects already, particularly by the Colleges—that is, the easier part of the task. To bring in the African, Asian, and other countries on a reasonable basis, fair to both sides, may demand years of educational effort and statesmanship.

Then there are the tiresome but very important matters of reciprocity regarding terms of service, superannuation, and the like. Nothing less, finally, will be needed than the possibility of completely free movement without penalty throughout the participating countries by persons engaged in these services. And need we balk at the same privilege for the citizens? Steps in this direction have been taken by universities, and in the field of health benefits in certain of the more mature countries, but there is obviously still a long way to go.

As to possible first steps, could we imagine the British Government either calling a representative conference on the subject or, alternatively, appointing a select committee to prepare recommendations for an initial organization to deal with the problem? The Commonwealth Education Conference sprang from a meeting of Finance Ministers—perhaps a meeting between the Ministers of Health and Education of the Commonwealth could consider and launch the health plan. W.M.A. and W.H.O. would both be interested, but, being international bodies, would seem to have added difficulties on that score at the outset. Limitation initially to the countries of the Commonwealth should make for an easier start.

May we express the hope that such a constructive, complicated, and difficult task might be handled by men with vision and with special feeling for it, using a minimum of administration, and a maximum of the many genuine impulses towards these objects that exist now and that might be expected to be forthcoming increasingly in the future.

Difficulties in the Way

The adumbration of these plans at once conjures up the difficulties. We find it hard enough to hammer out our health services on a satisfactory basis in our own individual countries. We are now asked to fuse them all into a universally acceptable one. The urgency of the greater task could well expedite the conclusion of the lesser ones. In the first place we must expect the cost to exceed that spent by the various countries merely for their own services as we see them now. There are, of course, a number of agencies meeting in part these extra costs already—the great foundations, the universities, and certain of the Governments. Private bodies, churches through their medical and other missions, and institutions such as the Royal Colleges and London House also make valuable contributions. In the latter we have the practical outcome of a vision of international service, conceived largely on a Commonwealth basis. The universities of the Commonwealth, likewise,

have made and are making a great contribution towards the more even distribution of knowledge and skills throughout the world. The Colonial Development Corporation is also an important instance, and in countries such as the U.S.A. and, more recently, Western Germany we see others in the various forms of overseas aid on a huge scale. Happily it seems inevitable that this distribution over the uneven earth should continue —what we are considering is an extended version of the process, and its greater effectiveness.

Differing educational standards and potentialities in the various countries constitute an obvious difficulty to be met only by persistent efforts to bring all areas up to at least an acceptable minimum. This, again, will cost money—a good example is the recent blue-print for education in Nigeria. A great deal of money is required for the education of an undeveloped country of 40 million people, and, certainly in the near future, it must be achieved by a process of sharing. This idea is steadily becoming more accepted in these days of great, if not superfluous and ostentatious, rates of consumption in some countries—the "affluent societies." The contrast between malnutrition and emaciation in one country as the dominant medical picture, and obesity and vascular degenerations as the besetting sins in a neighbouring one, cannot be harboured for long in a world so full of aeroplanes, radio, and television.

One great difficulty concerns the attitude taken up towards these matters in different countries both by the people as a whole and by interested individuals. Many are not troubled and are not inclined to make any effort. Others who might be sympathetic are deterred by real difficulties. It is a thought to move one's wife and children to a foreign country for two or more years, particularly if the children are at school age. The professional hazard—losing one's place on the home ladder—is a real one, and can be corrected only by a change of outlook on the part of those in authority, and indeed of the people as a whole. The idea that time spent in work abroad is wasted, or that the work is necessarily of a lower calibre than that done at home, is just not true. On the contrary, a man's training for his life's work in the United Kingdom or in New Zealand could in almost every instance be greatly enriched by well-chosen periods abroad. But, finally, nothing short of a genuine appreciation that all are parts of the whole can meet these difficulties. In the meantime proleptic appointments in a country like the United Kingdom, and various alternatives such as promising appointments of suitable grade on return, and the development of pension systems which would not be affected by such moves, must be relied on.

This cautious attitude towards overseas service is a particular difficulty in the United Kingdom. In more distant lands, such as New Zealand, for obvious reasons the idea of moving about is more accepted, as it is believed, with some justification, to engender greater knowledge and experience. But in every land there is a good deal of complacency and unreadiness to look beyond the immediate task and the local interest. To overcome this we must hope that the impact of T. C. Routley's "One World in Medicine"[8] will somehow or other oblige us to react more generously.

Prizes to be Won

Apart from the satisfactions, already mentioned, of distributing beneficent service more widely where it is greatly needed, and the opportunities of achieving scientific and professional progress, there are other advantages to be considered.

The existence of large areas within the Commonwealth needing service and development can be fairly regarded as a boon rather than an onerous task. How many well-developed countries, full of the arts and sciences and practitioners thereof, seem to be bursting at the seams, with no internal outlet for what has become a surplus of talents and trained men. Sweden, Holland, and Denmark are examples, and their nationals are to be found in many foreign countries. Perhaps the position is something like what we used to be told about capitalist economy in advanced countries—that they could not help producing too much and inevitably became involved in various struggles to dispose of the surplus profitably. In this case we should be thankful that we have this honourable and humanitarian outlet ready to hand within our own Commonwealth. The alternative would be a steady inturning of our energies where they cannot be fully utilized, with all the resulting tensions that that can lead to.

The very progress and success of medicine in these latter days may also emphasize the value of our Commonwealth outlet. Suppose, for example, some simple methods came about for dealing with cancer or some of the degenerative diseases. We might almost overnight find we had a lot of medical talent unemployed. In tuberculosis we have seen a diminution in some countries in the hospital accommodation and the medical talent required of recent years. The same process on a larger scale might lead many of us into wasteful infighting for individual survival. What an honourable alternative lies before us! And I personally would not limit our interest to Commonwealth countries. I would include any friendly country, like Ethiopia, that wished to join, so long as we had enough resources to permit us to do so.

Closer to hand, I think we can see in this proposition something for all of us. Every kind of medical man and every kind of health operation is needed. I am told that there is a great need for medical men for general duties in various parts of Africa—general practice, simple public health, and sanitation. What better change and challenge could there be to a general practitioner in the United Kingdom or in New Zealand, rather harassed and bowed down by the daily and nightly demands made upon him, than the prospect of a tour of duty in Uganda or Tanganyika for, say, two years? Even if he found the effort of facing up to the undertaking a great one, I feel sure the general experience, the geography, and the human problems he would encounter could not fail to interest him and enrich his life. We have spoken about specialists and the unique experiences and challenges that await them in underdeveloped lands. In reverse, can we not feel that a term of, say, two years in England, or in New Zealand, under good conditions of climate and work, would be very refreshing to a man or woman who has worked for some years in a tropical country?

Our institutions, too, may derive fresh life and energy under the demands of some such scheme as this. The B.M.A., for example, with its substantial Headquarters and almost world-wide organization, seems well suited to develop some of the functions that would be called for. The Colleges, too, would find their usefulness expanding. Government departments, bodies like the World Health Organization and the World Medical

Association, would receive a fresh impetus. Perhaps, as we have seen, our own B.M.A. Commonwealth Conference and Overseas Committee can take the initiative.

But the overwhelming satisfaction of achieving this co-operation—and in what field is there more prospect of success than in medicine and health ?—would lie in the substantial step it would represent towards human brotherhood and co-operation. We are already, through the advent of the radio and the aeroplane, one world, for better or for worse. Here is a chance to emphasize the good in contrast to the many opportunities for evil. All the peoples of the world suddenly seem to have grasped the idea that they need not continue in hunger, poverty, ill-health, and ignorance. They know with Isaiah that every valley can be exalted and every mountain and hill laid low, and they are determined in action to bring about the changes they desire. The newly awakened countries may not know clearly what the good life is, or how to achieve it—any more perhaps than we do in the wealthier countries ; but they do recognize some of the bad features of their present condition, as we do, and they will try to remedy them. They see in technology the way to grow more food, secure more shelter, and gradually to ameliorate their lot. How proper it is for us, who for the moment—perhaps a very fleeting moment—know a little more about these things, to wish to help ; how dismal our failure if we sit at ease in our Zions and do nothing. In terms of practical politics and even of self-interest it may be better to lend a hand—when and where it is wanted—while the brief opportunity is there.

It is not only in medicine and health that Commonwealth-wide co-operation is promising. The British Association meeting at Cardiff in September, 1960, talked about food production and mouths to be fed on the world scale. It was obviously again " one world " where mutual interdependence and co-operation seemed desirable, indeed inescapable. Progress in agriculture and in health go very much together, the one helping the other towards human betterment. It was Lord Bruce of Melbourne who wished to contrive this marriage some years ago at the United Nations. Similarly, in science generally we can hope for valuable results by wider co-operation. Again the process should be an easy one. For the principles on which the scientist works are of universal validity and application, and men meet in scientific discussion on equal terms, without any reference to class, creed, or colour. One world of science is therefore already with us in principle—let us have it in practice and directed towards beneficent ends. The final union of all mankind is the ultimate hope, in the Parliament of Man and the Federation of the World.

The Theme Again

There have been many major proposals and steps towards united efforts in recent years which should encourage us to feel that a comprehensive scheme for health in the Commonwealth is not too visionary and that it might be realized even in five to ten years' time. We still remember the feeling of wild surmise early in the war when Mr. Churchill proposed for us a common citizenship with France. Since the war there have been various plans for economic co-operation, common markets, and so forth between units and nations hitherto considering themselves as inviolable units. Even in defence we have the proposal to vest the Western European atomic weapons in an association of States rather than in one or more individual ones. These plans have made real progress, and in a few years many things that seemed utterly unrealistic have, in fact, come about. In the same way the current proposals, looked back upon from ten years hence, may seem quite modest. There has been great success already in international co-operation in science, in health, and in education.

Probably the chief obstacle, as always, lies in ourselves. We need—even as doctors—more of the compassion towards our fellow men that is our distinctive mark, so that we will want to spread our net of service wider. We need also the touch of imagination that will enable us to glimpse greater possibilities. The man with the muck-rake in *The Pilgrim's Progress* is too much with us. He was so bent on heaping together the dust and the leaves that he never looked up, and never saw the celestial crown above his head. Let us straighten our backs and look up.

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CIGARETTE SMOKING AND ISCHAEMIC HEART DISEASE

BY

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Attention was drawn to the association of cigarette smoking and mortality from ischaemic heart disease in two surveys on smoking habits and lung cancer (Hammond and Horn, 1954 ; Doll and Hill, 1956). The following points are worthy of emphasis: that this finding was an incidental one ; that the two surveys were quite independent, one being carried out in the United States of America and the other in Great Britain ; and that a graded association existed in that the mortality increased in proportion to the amount smoked. Higher mortalities were seen in those who smoked cigarettes as opposed to pipes or cigars. Despite this, the finding has been the subject of criticism in its statistical aspects (Berkson, 1955).

Epidemiologically, too, there is a relationship between the prevalence of ischaemic heart disease and fashions in tobacco consumption. Since the invention of the cigarette-making machine in 1880 (*Lancet*, 1957) the fashion of pipe smoking has given way to cigarette smoking, and the increasing rate of tobacco consumption in this manner parallels the increasing mortality from ischaemic heart disease (see Fig. 1). In England, too, the higher mortalities of the professional and executive classes seen in the occupational mortality statistics of the Registrar-General (1954) could be attributed to the

fact that economic factors influence smoking habits (Todd, 1957). Men smoke more than women, and the rationing of tobacco during the 1939–45 war years in Europe could be held responsible for the sharp decrease in mortality from circulatory diseases that occurred (Strøm and Jensen, 1951). Another epidemiological feature of ischaemic heart disease—the wide interracial differences in mortality—bears some relationship to differences in the cigarette-smoking habits in those countries from which such information is available (see Fig. 2) (Todd, 1957). Closer examination reveals certain discrepancies. Finland and Japan, for example, do not differ greatly in smoking habits but have vastly different mortality rates. In fact, Fig. 2 may merely emphasize

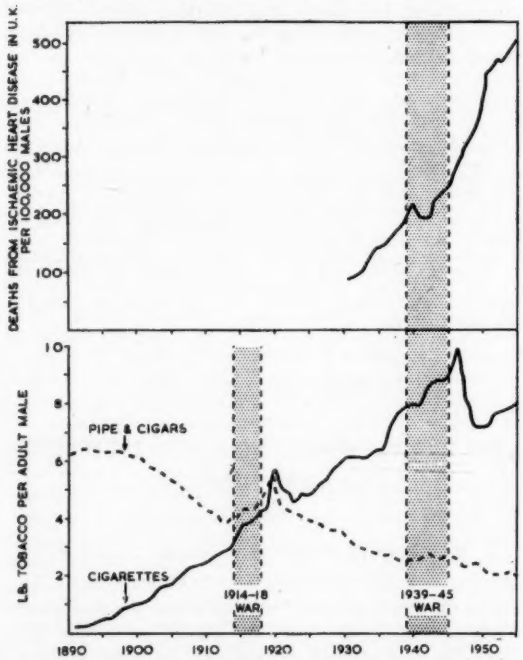

FIG. 1.—Since the turn of the century tobacco consumption in the form of pipe and cigar smoking has given way to cigarette smoking in the United Kingdom. This rise in cigarette consumption parallels the increase in mortality from ischaemic heart disease.

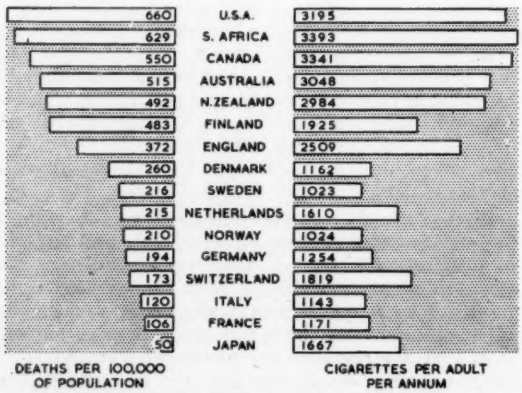

FIG. 2.—Interracial mortality from ischaemic heart disease in relation to cigarette consumption. A high consumption of cigarettes per adult per annum is seen, particularly in those countries with a high mortality from ischaemic heart disease.

that heavy cigarette smoking is a habit acquired especially by those in the English-speaking world.

Nevertheless epidemiologically there is sufficient evidence to support the findings of the lung-cancer surveys. On examining the association further one is immediately confronted with two major possibilities. Firstly, has the smoking of a cigarette a direct effect by interfering with either coronary blood flow or heart action? Secondly, is the effect indirect in that both cigarette smoking and ischaemic heart disease mortality are related to a third and common factor?

Direct Effect

There is little to suggest that the increased mortality in cigarette smokers is due to the effect of tobacco products on the coronary circulation. The onset of myocardial infarction during or immediately after the smoking of a cigarette has not as yet been related, and the term "tobacco angina" is now less fashionable. Pickering and Sanderson (1945) found no evidence to suggest that smoking produced coronary vasoconstriction, for smoking before or during exercise did not reduce the exercise tolerance in a subject with angina pectoris. They felt that smoking was a factor in producing pain by virtue of its increasing the work of the heart through raising the pulse rate and blood-pressure.

Bargeron *et al.* (1957), by catheterizing the coronary sinus in order to obtain coronary venous blood, measured the effect of smoking on coronary blood flow, coronary vascular resistance, and the myocardial extraction of oxygen, glucose, lactates, pyruvates, and ketones. Their results failed to show any impairment resulting from smoking.

Ballistocardiographic changes occur after the smoking of a cigarette in persons with and without ischaemic heart disease, particularly when they are over the age of 50 years (Russek *et al.*, 1955; Davis *et al.*, 1956). There is more evidence to suggest a relationship of these changes to the peripheral circulation than to alterations in the coronary circulation or myocardium. So far it has not been possible to identify physiological changes in the coronary circulation as a result of cigarette smoking which would account for the statistically higher incidence of coronary disease in smokers (*Brit. med. J.*, 1956).

With respect to blood-clotting, Blackburn *et al.* (1959) studied the effect of smoking on the recalcified plasma "stypven time." The only change of statistical significance before and after smoking was a rise in pulse rate. These studies on the immediate response to a single cigarette may be little guide to the long-term effects of heavy cigarette smoking. Studies on groups with and without ischaemic heart disease revealed that fibrinolysis in the cigarette smokers of each group was more rapid than in the non-smokers, but the differences were not significant (Lackner and Bronte-Stewart, personal observations, 1960).

Indirect Effects

It is indeed possible that the smoking habit and ischaemic heart disease may be related indirectly in that both may be related to a "third and common factor" (*Brit. med. J.*, 1955). Sedentary occupations may allow the opportunity for greater consumption of cigarette

tobacco, and most heavy cigarette smokers agree that their smoking rates increase during periods of mental strain. In order to study these possibilities, analysis of certain data collected from an interracial survey in the Cape Peninsula during 1955 (Bronte-Stewart *et al.*, 1955) was pursued. This survey occurred prior to the widespread adverse publicity given to the cigarette-smoking habit with respect to health.

Material and Methods

The sample consisted of approximately 600 apparently healthy adult men aged 25 to 55 who were actively engaged in their occupations. All who had clinical, haematological, or electrocardiographic abnormalities were excluded from further analysis. Data were obtained from the individuals concerning their income, occupation, smoking habits, and customary diet. The information on the diet was obtained by recall, particular emphasis being laid on specific items of food that contained fat, such as meat, dairy products, eggs, margarine, oils, etc. Quantification was based on the average helping method and the fat content was computed from food tables. Anthropometric measurements were recorded and the cholesterol was chemically determined in the serum and after filter-paper electrophoresis in the alpha and beta fraction (Anderson and Keys, 1956).

In the analysis of the results each racial group was subdivided into three income classes, but the economic scale is such that the high-income Bantu would overlap into a similar economic plane as the low- and medium-income Cape Coloured group, whereas the high-income Cape Coloured subdivision would be on an economic par with the low-income European. Cigarette smokers were analysed separately from pipe smokers and were classified into heavy, medium, and light, if they smoked more than 20 a day, between 10 and 20, and fewer than 10 respectively. Later, owing to small sample size, the light and medium classes were grouped together. No account was taken of whether filter- or cork-tipped or plain cigarettes were preferred. Pipe smokers were classified into heavy, medium, and light, if more than ¼ lb. (113 g.) was smoked in a fortnight, if this was smoked in a month, or less than this per month respectively. As there were too few cigar smokers, tobacco chewers, or snuff takers, they were excluded from the analysis.

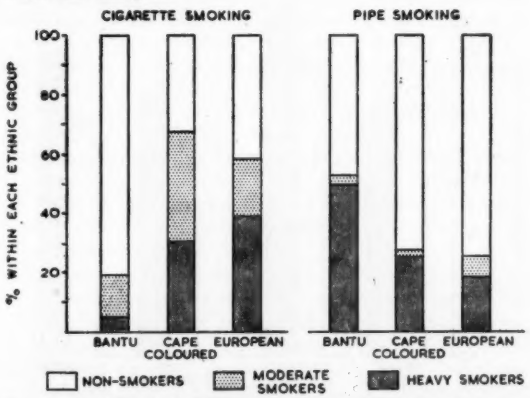

FIG. 3.—Smoking habits of Capetown's three racial groups. The smoking habits of the Cape Coloured and European are very similar, despite marked differences in death rate from ischaemic heart disease.

Results

Smoking Habits of the Three Racial Groups.—The smoking habits of the Cape Coloured and European are very similar, but the Bantu differ markedly (see Fig. 3). Of the Bantu sampled 81% claimed that they never smoked cigarettes, but over half could be classed as heavy pipe smokers. Conversely there was a high proportion of men who never smoked pipes among the Cape Coloured (73%) and the European (76%), whereas 31% of the former and 39% of the latter were heavy cigarette smokers. As only 5% of the Bantu sample could be classed as heavy cigarette smokers, all Bantu were excluded from further analysis, which meant that the sample consisted now of 179 Cape Coloured and 181 European men.

Economic Privilege and Tobacco Consumption.—In Capetown, tobacco is relatively inexpensive and the supply is plentiful. A packet of 20 cigarettes (king size, filter tip) of average grade cost just less than 1s. 6d. in 1955, while a ¼ lb. (113 g.) of pipe tobacco could be bought for less than 2s. 6d. In the European sample,

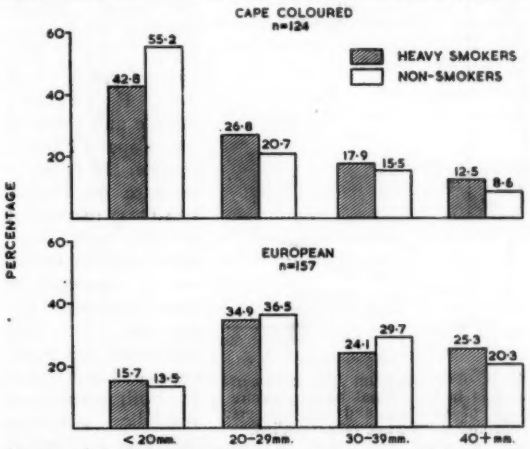

FIG. 4.—The distribution of obesity is similar in both smokers and non-smokers as measured by the combined arm and scapula skin fold.

economic privilege bore no relationship to the amount of cigarette tobacco smoked. There were as many heavy cigarette smokers among the low-income Europeans as amongst the high (33%), but just more than half (53%) of the middle-income Europeans were heavy cigarette smokers. In the Cape Coloured sample, however, the frequencies with which heavy cigarette smokers were seen increased from 17% in the low-income group to 27% in the medium-income group to 49% among the high-income group.

Cigarette Smoking at Various Ages.—In neither the European nor the Cape Coloured samples was there any significant effect of age on whether they were heavy, medium, light, or non-smokers among the three decades of ages from 25 to 55.

Occupation and the Cigarette-smoking Habit.—Subdivision of the nature of the occupation into five different grades of physical activity ranging from sedentary occupations through intermediate grades to heavy manual labour failed to reveal that the majority of the heavy cigarette smokers belonged to sedentary or light-activity occupational classes. In fact, there were more heavy cigarette smokers amongst the occupational

classes requiring higher grades of physical activity, but the differences seen were not significant on chi-square analysis ($0.2>P>0.1$).

Body Build and Cigarette Smoking.—There is no relationship between height or weight and the amount of cigarettes smoked. The distribution of obesity as measured by the sum of the arm (triceps) and scapula skin folds recorded by the use of callipers standardized at 10 g. per square mm. is shown in Fig. 4. A marked difference in the distribution between European and Cape Coloured samples can be seen, but no differences exist between heavy and non-cigarette smokers in either racial group ($0.8>P>0.7$ for Europeans; $0.7>P>0.5$ for Cape Coloureds).

Blood-pressure and the Cigarette-smoking Habit.—On each individual casual (non-basal) blood-pressure readings were taken; each reading being recorded on first contact with the examining physician. No significant differences at given age existed between the mean blood-pressure levels corrected for arm circumference of the European sample and those of the Cape Coloured sample. In order to increase the sample size these two racial groups were analysed together by the use of regression of blood-pressure (Y) on age (X). This regression was linear over this age range for both systolic and diastolic pressures (see Fig. 5). Neither in the steepness of the regression slopes nor in the intercepts could significant differences be found between the heavy smokers and the non-smokers. In fact, throughout the age range the mean blood-pressure of heavy smokers was lower than that of the non-smokers.

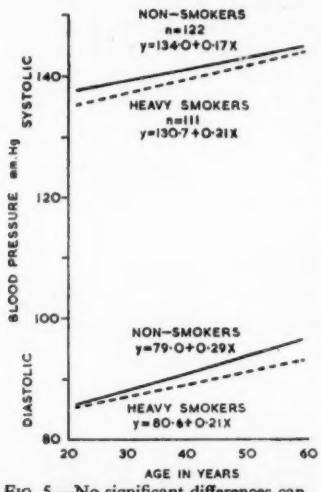

FIG. 5.—No significant differences can be seen in the casual blood-pressure levels of smokers and non-smokers throughout the age range studied.

Serum Cholesterol Levels.—Comparison was made on each race separately at two age ranges, 25–39 years and 40–55 years. The heavy cigarette smokers in the younger age range had the higher mean serum cholesterol levels. In the 40–55 year range the reverse trend was seen. A consistent trend, however, in both age-groups and in both Cape Coloured and European samples was the distribution of cholesterol between the alpha- and beta-lipoprotein fractions. The percentage of cholesterol in the beta fraction is always higher in the cigarette smokers, and the amount of cholesterol (in mg./100 ml.) in the alpha fraction is consistently lower, giving a higher $\beta:\alpha$ ratio (see Fig. 6). This applies to comparisons between heavy smokers and non-smokers of the same age, the same race, and even the same income group (last-mentioned not shown).

Dietary Fat Intake and the Smoking Habit.—Owing to the consistency of the difference between the serum cholesterol changes, attention was then paid to the dietary-fat intakes of heavy cigarette smokers and non-smokers. Running concurrently with the lower alpha-lipoprotein cholesterol levels of the heavy smokers are higher intakes of fat—in particular that from animal sources—and this trend is seen consistently when comparisons are made between groups on the same economic plane at given age and within the same race (see Fig. 7). Owing to wide variation, however, the differences between means are not statistically significant on analysis of single group pairs.

Discussion

Epidemiological studies have considerable limitations, but could provide a lead for further study under controlled conditions. The 1955 mortality rate from ischaemic heart disease for men aged 55–59 in the Cape Coloured community was 273 per 100,000, while the figure for the White (European) was 628 per 100,000 (Director of Census and Statistics, personal communication, 1959), yet in this study the smoking habits of these two racial groups are essentially similar. Heavy cigarette smokers were, in fact, more commonly seen among the high-income Cape Coloured than among either the low-income or the high-income Europeans.

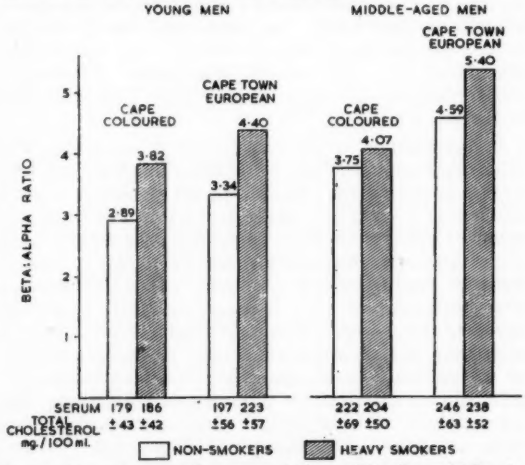

FIG. 6.—In young men the serum cholesterol levels are higher in smokers than in non-smokers, but a reverse trend is seen in middle-aged men. The distribution of cholesterol between the beta and alpha lipoprotein fractions shows a consistent difference, however. The smokers in each racial group and in each age range show a higher beta:alpha cholesterol ratio than the non-smokers.

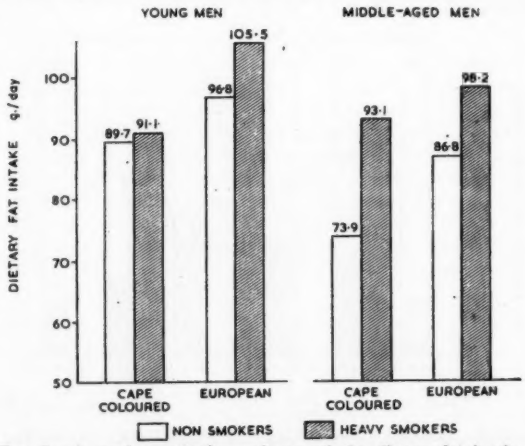

FIG. 7.—A semi-quantitative estimate of the dietary fat intake reveals that smokers in each race and in each range consume more fat than the non-smokers.

Despite the relatively small sample-size in this survey the findings agree with those of other similar surveys (Gofman *et al.*, 1955; Thomas, 1958; Karvonen *et al.*, 1959). In the rural areas of Finland (Karvonen *et al.*, 1959) the non-smokers tended to be fatter as measured by the arm and scapula skin fold, but in Helsinki there were no differences in body fatness between smokers and non-smokers. Likewise the arterial blood-pressure levels were higher in the non-smokers. This finding is somewhat surprising in view of the immediate effects of smoking a cigarette on the blood-pressure (Burn, 1957) and the evidence that the adrenaline output in man may be increased during smoking (Watts and Bragg, 1956). These findings do not exclude the possibility that the increased susceptibility to ischaemic heart disease in the heavy cigarette smokers could arise from the blood-pressure changes during smoking, as it is well recognized that elevation of the blood-pressure accentuates the severity of atheroma. In the rabbit it has been shown that for this effect not much of a rise in pressure is necessary (Bronte-Stewart and Heptinstall, 1954), nor does it appear that the elevation need be long sustained, as daily alterations in the rabbit's posture with resulting variations in arterial pressure led to marked accentuation of atheroma (Wilens, 1943).

On the other hand, the mechanism for the increased susceptibility of the smokers could operate via the changes in serum lipid found. Apart from higher serum cholesterol levels, patients with ischaemic heart disease have less cholesterol in the alpha-lipoprotein fraction and more in the beta fraction, and hence a higher $\beta:\alpha$ ratio than age-matched controls (Barr, 1953; Nikkilä, 1953; Oliver and Boyd, 1955). In the Capetown survey the heavy cigarette smokers, irrespective of race, age, and economic status, possessed higher $\beta:\alpha$ serum cholesterol ratios. In California, Gofman *et al.* (1955) have likewise reported that their heavy cigarette smokers in the 20–39 age-group had higher serum cholesterol values than non-smokers but not in the 40–59 age-group. In all age-groups, however, the heavy cigarette smokers had the type of ultracentrifugally determined lipoprotein pattern resembling that found in patients with ischaemic heart disease.

In the Finnish survey (Karvonen *et al.*, 1959) higher serum cholesterol values were found in the heavy smokers in all age-groups and at all areas with the exception of the 50–59 age-group in the rural areas. The difference, unlike other studies, appeared to increase with age, and those who smoked the most tended to have the highest serum cholesterol levels. Thomas (1958) has also reported a statistically significant association between smoking and elevated serum cholesterol levels in American medical students. It would appear, then, that in all surveys to date a consistent difference that was found on comparing heavy cigarette smokers and non-smokers appears to lie in the serum lipid levels, whether these individuals have been compared in California, Finland, Baltimore, or Capetown.

The known influence of the diet on the level of cholesterol in the serum led to the analysis of the dietary fat intakes of these individuals. There are no publications that exhibit differing food preferences of individuals differing in their smoking habit, but there is a widely held impression that heavy smokers prefer spicy and savoury food and that with abstinence from smoking not only an increase in appetite follows but the perception of odours, tastes, and flavours becomes more acute. It is known, for example, that men who stop smoking tend to become fatter (Brožek and Keys, 1957). The data on diet in this survey, however, could only be regarded as semi-quantitative; the information obtained by recall with quantification being based on the average helping method. As the interrogator had no prior knowledge of the manner of subsequent subdivision of the sample, it was unlikely that any bias was exerted toward any particular group. There was, however, sufficient to indicate further study on taste thresholds and food preferences of smokers and non-smokers (Bronte-Stewart, 1956). This had led to the findings reported by Krut *et al.* (1961) and Perrin *et al.* (1961).

Summary

The evidence for and against a relationship between cigarette smoking and mortality from ischaemic heart disease is emphasized and discussed.

Epidemiologically there is some relationship between susceptibility to ischaemic heart disease and the cigarette-smoking habit, but it is pointed out that the relationship need not be causal.

There is little evidence to suggest that cigarette smoking has a direct effect on the coronary circulation or blood coagulability, but the immediate effects of smoking a cigarette can be seen by a rise in pulse rate and a rise in both systolic and diastolic arterial pressures.

On the hypothesis that the cigarette-smoking habit and susceptibility to ischaemic heart disease may be merely related indirectly, in that both would be related to a third and common factor, an analysis was conducted on the multiracial community resident in Capetown.

No relationship could be found between age, income, nature of the occupation, height, weight, or degree of obesity as measured by the skin-fold thickness. The arterial pressures of heavy smokers tended to be slightly lower than those of non-smokers, but the differences were not significant. A highly consistent difference shown was the distribution of cholesterol between the alpha- and beta-lipoprotein fractions. This held true at each age range, for each race, and for each income subgroup. Such differences were paralleled by differences in the customary dietary fat intake, but statistically these differences were not significant.

This work was undertaken as part of the programme of the Clinical Nutrition Unit, which is under the direction of Professor J. F. Brock and is supported in the University of Capetown by the Council for Scientific and Industrial Research. It is a pleasure to acknowledge in particular the assistance and advice given by Professor Ancel Keys, of the University of Minnesota, where much of the analysis of this work was completed during the tenure of a fellowship offered by the American Tobacco Industry Research Foundation. Considerable assistance was given, too, by Mr. G. F. Todd, of the Tobacco Manufacturers Standing Committee of Great Britain.

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TASTE PERCEPTION IN SMOKERS AND NON-SMOKERS

BY

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Taste is a complex sense. In addition to sensations arising in taste receptors, it is influenced by chemical, tactile, warm, and cold receptors in the mouth, and in particular by olfactory sensations (Houssay, 1955). It is presumably the complexity of the taste sense that has limited its objective study. The subject is, however, simplified by the generally held view that there are but four primary taste modalities: sweet, sour, salt, and bitter (Houssay, 1955; Best and Taylor, 1955; Fulton, 1955; Bell, Davidson, and Scarborough, 1959), and that odour plays no part in the recognition of these pure tastes.

Smoking is popularly held to decrease taste perception. This is attested by almost everyone subject to the habit, and particularly those who have mastered their addiction to it. There are, however, few objective studies on the effects of smoking on taste.

Bronte-Stewart (1956) discussed the relationship between smoking and ischaemic heart disease, and put forward the hypothesis that smoking could affect food preferences via the taste mechanism. To test this hypothesis, taste thresholds for sweet, sour, salt, and bitter in groups of smokers and non-smokers were determined and compared. Taste thresholds were similarly determined immediately before and immediately after the smoking of a cigarette in a sample of the above groups. In view of the findings, the relationship between the ability to taste phenylthiocarbamide (P.T.C.) and smoking was also examined.

Material and Methods

Two groups of subjects from different walks of life were tested in an identical manner a few weeks apart: (1) 80 medical students, 40 of whom were smokers—the mean age of this group was 20.5 (±3.1) years; and (2) 76 employees of a local insurance company, 39 of whom smoked, having a mean age of 27.6 (±9.3 years). Thus a total of 79 smokers and 77 non-smokers were tested. Tests were carried out over several days between 9.30 and 11 a.m. on each of these groups.

Test Procedure.—The subjects were asked to complete a questionary giving details of their age, sex, and smoking habits. They were informed of the aim of the experiment and of the taste modalities to be tested. They were told that there would be no fixed order in the substances to be tasted and that tap-water would be used from time to time. The observer recording the thresholds was kept ignorant of the smoking habits of the subjects. These tests were thus done in a "blind" manner. It was arranged that there were approximately equal numbers of smokers and non-smokers having threshold determinations on each day. Stepwise dilutions of sucrose (20–0.15%), citric acid (5–0.15%), sodium chloride (5–0.15%), and quinine hydrochloride (0.1–0.006%) were made up into solutions with tap-water. Each step in the titre series was a multiple of 0.5 of the preceding step. A single drop of a solution was deposited on to the centre of the protruded tongue by means of a pipette. The subject then withdrew his tongue, tasted the solution at leisure, and swallowed the drop. The threshold for each substance was determined in turn by depositing increasing concentrations of each solution, beginning with the most dilute. When two consecutive correct answers were given, the lower concentration was recorded as the threshold in each case. Mouths were rinsed with tap-water after each taste was identified. In this manner it was possible to determine the mean threshold value for each substance in each group of subjects.

Immediate Effects of Smoking.—Sixty of the above individuals, including 29 smokers, were subjected to a second series of tests. Initial threshold determinations were made as above, and the subject then went out for 10 minutes. The smokers all smoked a cigarette, while the non-smokers waited for a similar period until recalled. Each subject was then retested and thresholds were again determined.

Phenylthiocarbamide (P.T.C.). — Titres (0.13–0.00025%) were made up into solution in tap-water. Each step in the titre series was again a multiple of 0.5 of the preceding step. These threshold values were determined in the same manner as those above in 75 subjects, of whom 32 were smokers, drawn from both the student and the insurance groups.

Results

Thresholds for the Four Primary Taste Modalities.—The student group showed no significant differences between smokers and non-smokers in the mean taste thresholds for sweet, sour, or salt. The mean threshold for bitter, however, was significantly higher ($P<0.001$) in the smokers than in the non-smokers. These findings

were exactly reproduced in the insurance group of subjects. Neither age nor sex variables between the groups account for this finding (Table I). Thus in two separate groups it was shown that smokers taste bitter less well than non-smokers (Fig. 1).

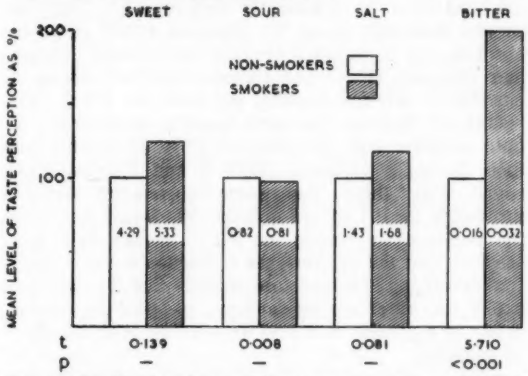

FIG. 1.—Combined student and insurance groups' mean threshold values for each of the taste primaries, comparing 79 smokers with 77 non-smokers. Note the significantly higher threshold among smokers for bitter only.

TABLE I.—*Mean Thresholds for Quinine Solutions in Relation to Age and Sex in Smokers and Non-smokers. Note that Allowing for Age and Sex Variables Does Not Affect the Finding that Non-smokers Have a Significantly Better Taste Acuity for Bitter than Smokers*

Class	Smokers		Non-smokers		t	P
	No.		No.			
All subjects (Mean age)	79	0·032 (25·6±9·5)	77	0·016 (22·0±4·9)	5·710	<0·001
Males only (Mean age)	66	0·032 (23·6±8·2)	54	0·017 (21·3±5·4)	5·017	<0·001
Males < 40 yrs. (Mean age)	61	0·031 (22·5±1·6)	54	0·017 (21·3±5·4)	4·684	<0·001
Females only (Mean age)	13	0·035 (33·6±13·4)	23	0·013 (22·5±5·6)	3·019	<0·01

Age in Relation to Thresholds for Bitter.—The mean threshold values in the non-smokers showed no significant change in considering the age-groups: under 20 years (0.016%), 20–30 years (0.014%), over 30 years (0.021%). On analysis of variance P>0.2. In the smokers, however, there was a progressive deterioration with age: under 20 years (0.026%), 20–30 years (0.034%), over 30 years (0.044%). Analysis of variance of the mean quinine thresholds in these age groups showed that this deterioration was significant (0.05>P>0.01) (Fig. 2).

Amount Smoked in Relation to Thresholds for Bitter.—The light smokers (not more than 10 cigarettes/day) had a mean threshold level of 0.027%. This was significantly less than the mean level (0.040%) in the moderate smokers (11–20 cigarettes/day) (P<0.001). There was, however, no further change in the mean level of those smoking more than 20 cigarettes/day (0.033%) (P<0.4). This mean threshold was also significantly higher than in the light smokers (P<0.02) (Fig. 3). Light smokers are thus less affected than moderate smokers, but there appears to be no further deterioration if more than 20 cigarettes a day are smoked.

Immediate Effects of Smoking.—In the 60 subjects tested it was found that there was on the whole a slight improvement in taste perception for the taste primaries in both smokers and non-smokers. None of these changes were, however, statistically significant, nor was the improvement in the smokers significantly different from that in the non-smokers (Table II). The smoking of a cigarette, then, had no immediate effect on taste perception.

Phenylthiocarbamide (P.T.C.)—Thresholds for this substance showed the classical bimodal distribution into "tasters" and "non-tasters" in both smokers and non-smokers (Fig. 4). The antimode of these distributions

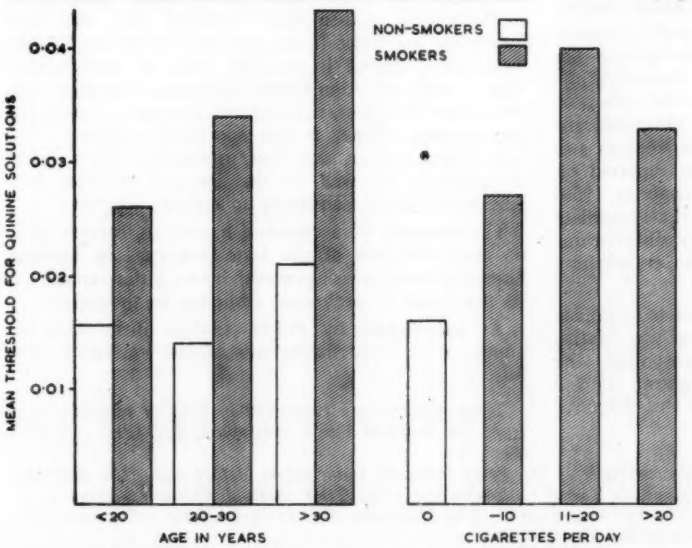

FIG. 2

FIG. 3

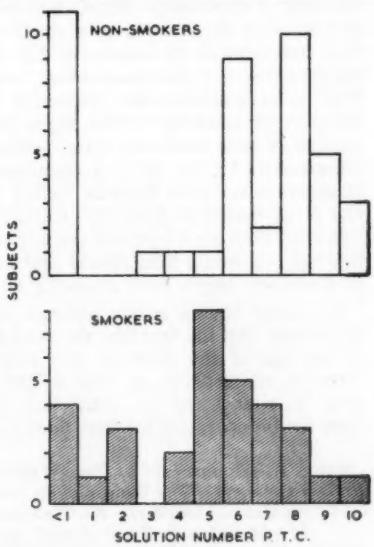

FIG. 4

FIG. 2.—Mean threshold for quinine solutions in relation to age level in smokers and non-smokers, showing a significant and progressive deterioration with age among the smokers only. This effect is thus attributed to the duration of smoking. FIG. 3.—Mean threshold for quinine solutions in relation to amount smoked. The moderate smokers showed a significantly higher threshold (P<0.001) than the light smokers. The threshold in the heavy smokers was not significantly different from that in the moderate smokers (P<0.4), but was significantly greater than in the light smokers (P<0.02). FIG. 4.—Number of subjects identifying the taste of P.T.C. as bitter at each concentration from 0.13 to 0.00025%, corresponding to solution numbers 1–10. Those subjects not identifying this taste from one drop are grouped under solution number <1 The antimode of these distributions is taken as being between solution numbers 2 and 3. The distribution between "tasters" and "non tasters" was the same in smokers and non-smokers on chi-square analysis (P>0.9).

is taken as being between solution numbers 2 and 3. Chi-square analysis showed that the distribution of smokers between "tasters" and "non-tasters" is the same as for non-smokers ($P>0.9$). Analysis of the P.T.C. tasters showed that in smokers the mean threshold was a titre of 0.0053%, whereas in the non-smokers it was lower (0.0034%). The difference, however, was not significant ($0.2>P>0.1$).

Discussion

It has been shown that the taste acuity of smokers for sweet, sour, and salt is not significantly different from that of non-smokers. The perception of bitter is, however, significantly worse in smokers (Fig. 1).

There are few reported studies with which to compare our results. As in our study, Richter and Campbell (1940) report that excessive smoking did not affect taste sensitivity for sucrose solutions. Cooper, Bilash, and Zubek (1959), in a study of the effects of age on taste, mention that in a sample of 58 smokers and 42 non-smokers from their subjects there were no significant differences in taste sensitivity for any of the taste primaries. Their technique, using a sipping method, did not ensure that a fixed amount of each solution was offered for tasting on each occasion.

Age has been shown to influence taste acuity, but not over age range (Harris and Kalmus, 1950–1 ; Kalmus, 1958 ; Cooper *et al.*, 1959). Sex has also been shown to influence taste in that females, as a group, are more sensitive (Falconer, 1946–7 ; Harris and Kalmus, 1950–1 ; Kalmus, 1958 ; Pangborn, 1959). This variable also cannot account for the difference in sensitivity to bitter between smokers and non-smokers, since, although there were more females among the non-smokers, their exclusion did not affect the results (Table I).

Unfortunately no record of the age of onset of smoking is available. Since, however, most persons start smoking in their late teens, the finding of a progressive deterioration in sensitivity for bitter among the smokers, but not the non-smokers, with increasing age (Fig. 2) is probably best explained by the effect of duration of smoking. The slight but non-significant changes in taste acuity on repeat testing in smokers and non-smokers (Table II) is a phenomenon reported on by others (Harris and Kalmus, 1950–1 ; Pangborn, 1959) and is attributed to learning. Certainly the immediate effects of smoking a cigarette are not responsible for our findings. It would thus appear that continued smoking progressively affects taste acuity for bitter.

The same finding in two separate unselected samples of subjects and the fact that the association was relative to the age of the smokers, and thus presumably the duration of smoking, as well as the amount smoked (Fig. 3), strengthens our conviction that this defective taste for bitter among smokers does exist.

The possibility that individuals with an inherently defective taste for bitter were more likely to become smokers was entertained. Fox (1932) discovered that all people, regardless of race, age, or sex, are divided into "tasters" and "non-tasters" of P.T.C., and that this character is genetically determined. This was shortly thereafter shown by Blakeslee (1932) to be not absolute, but to follow a bimodal distribution. Salmon and Blakeslee (1935) and Falconer (1946–7) found no correlation between smoking and taste for P.T.C. Our results, in showing the same bimodal distribution for both smokers and non-smokers (Fig. 4), concur with their findings. Falconer (1946–7) and Kalmus (1958) found that there was some correlation between thresholds for P.T.C. and quinine. We found that, while the non-smokers among the P.T.C. tasters were more sensitive that the smokers, the difference was not significant ($P<0.2$). It is therefore unlikely that the decreased acuity for bitter among smokers, as tested by quinine, arises on a genetic basis and we attribute it to the effects of smoking.

The possible explanation for the selective inhibition for bitter, and not sour, salt, or sweet, by smoking is speculative. El-Baradi and Bourne (1951) have shown by histological techniques that the alkaloid quinine strongly inhibits an esterase in the taste buds, suggesting that enzyme inhibition is the mechanism in taste perception. Nicotine and other alkaloids are abundant in tobacco smoke (Henry, 1949 ; Salter, 1952 ; Goodman and Gilman, 1955 ; Sollmann, 1957). It is conceivable that the alkaloids of tobacco smoke may act in a manner similar to quinine, and in this way possibly fatigue the mechanisms for perception of bitter.

Conclusions and Summary

In two completely separate population groups, a comparison of taste perception among samples of smokers and non-smokers revealed that the taste thresholds for bitter (using quinine hydrochloride) was significantly higher in smokers than in non-smokers. There was no significant difference in the taste thresholds for sweet, sour, or salt between smokers and non-smokers. Bitter is thus specifically affected. The age of the smoker, and thus presumably the duration of smoking, as well as the amount smoked, both adversely affected sensitivity to quinine solutions.

The smoking of a cigarette has no immediate effect on taste, for any of the taste primaries in smokers. Smoking, in decreasing sensitivity to bitter, appears to be the result of prolonged addiction to the habit.

As determined by P.T.C. testing, there does not appear to be a genetic inability among smokers to taste bitter.

These studies were supported in part by research grants from the National Heart Institute, U.S.A. (PHS: H-3316).

TABLE II.—*Comparison of Taste Thresholds for Each of the Taste Primaries immediately Before and After Smoking a Cigarette. The Non-smokers were Similarly Tested, Allowing the Same Time Interval Between Testing as in the Case of Smokers. No Significant Changes were found. The Immediate Effects of Smoking a Cigarette thus do not Influence Taste Acuity for any of the Taste Primaries.*

	Smokers (29)					Non-smokers (31)					(A)–(B)
	Before	After	Diff. (A)	t	P	Before	After	Diff. (B)	t	P	P
Sweet ..	6·21	5·06	−1·15	1·272	—	4·38	4·12	−0·26	0·659	—	—
Sour ..	0·954	0·866	−0·088	0·595	—	0·719	0·739	+0·020	0·049	—	—
Salt	1·94	1·78	−0·16	0·495	—	1·23	1·11	−0·12	0·003	—	—
Bitter ..	0·035	0·027	−0·008	1·526	—	0·016	0·015	−0·001	1·561	—	—

and the South African Council for Scientific and Industrial Research. We are grateful to Professors A. W. Sloan and L. Eales for assistance given.

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SMOKING AND FOOD PREFERENCES

BY

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It was of interest to determine whether the differences in taste perception that exist between smokers and non-smokers (Krut, Perrin and Bronte-Stewart, 1961) had any bearing on their food preferences. There is a belief that smokers do prefer more savoury foods, and that, with abstinence from smoking, sweeter foods are preferred, and this possibly accounts for the subsequent increase in weight that has been reported (Brožek and Keys, 1957). As these impressions are without any factual foundation, this study was planned to obtain data in this regard.

Material and Methods

The subjects of this study were sampled from two sources—a group of 80 second-year medical students and a group of 76 males and females from an insurance firm whose ages ranged from 17 years to 50 years.

Firstly, in a printed questionary the subjects, who consisted of 79 smokers and 77 non-smokers, were asked to indicate their preferences for salty, spiced, sour, or bland foods, examples of each kind being given.

Secondly, in conjunction with the questionary, a diet history was taken by the system of recall, paying particular attention to the fat content of the diet derived from common foods: 63 smokers and 62 non-smokers were questioned.

Finally, the male smokers (all smoking more than 20 cigarettes/day) and non-smokers, whose ages matched, were selected from the insurance personnel tested for taste sensitivity. Thus sex, age, and socio-economic background were matched so that the variable factors were limited so far as possible. From these men, two small groups, A and B, consisting of heavy smokers and non-smokers, were selected with the use of random number tables (Fisher and Yates, 1957) for a more detailed dietary investigation.

Nine smokers and eight non-smokers formed group A and eleven smokers and nine non-smokers group B. A detailed description of the daily diet was obtained, paying attention not only to the main meals but also to snacks, the variations during the week and week-ends, and the methods used in cooking. The amounts eaten were gauged on average portions, but if there were obvious deviations these were taken into account. The fat content of various foods was obtained from standard food tables (Fox and Golberg, 1944; McCance and Widdowson, 1946).

Results

Subjective Taste Preferences.—Of the 79 smokers who completed the questionary on their preferences for salty, spiced, sour, and bland foods, 36 said they preferred salty foods, 50 spiced food, 24 showed preference for sour food, while 40 preferred bland food. Of the 77 non-smokers, 29 preferred salty food, 39 spiced, 30 sour, and 61 bland food. The differences were significant for bland food ($P<0.001$), but for salty and spiced food combined ($0.1>P>0.05$) the result was not quite significant.

Semi-quantitative Dietary Survey.—The total fat assessed from common fatty foods came to a mean of 577 g./week for smokers and 543 g./week for non-smokers—that is, smokers ate a slightly more fatty diet than non-smokers. However, this brief history did not take into account all the fat eaten in the diet, and the results were not significant.

Detailed Dietary Surveys

In group A, smokers consumed 1,215 g. fat/week as compared with 1,094 g. fat/week for non-smokers, but this was not statistically significant ($0.5>P>0.4$). On more detailed examination, however, marked differences existed in the types of foods that constituted the overall fat intake in these two groups. Heavy smokers consumed significantly more meat and more eggs than did non-smokers, but non-smokers consumed somewhat more fat in the form of cakes, sweets, and chocolate.

Almost the same results were shown in group B—that is, the total fat was 1,155 g./week for smokers and 931 g./week for non-smokers. Similarly, heavy smokers consumed significantly more meat and more eggs than did non-smokers, but the intake of fat from other foods was again not very different (Fig. 1).

For the purpose of statistical analysis, group A and group B were combined and the results shown as a mean. The differences between smokers and non-smokers for meat and eggs were significant for these samples ($0.02>P>0.01$ and $0.05>P>0.02$ respectively). No statistically significant difference was seen in the

other food groups, nor in the difference between total fats—that is, 1,176 g. fat/week for smokers compared with 1,029 g. fat/week for non-smokers ($0.1>P>0.05$).

The percentage of fat derived from cheese, butter, milk, and cream combined remains almost constant for smokers and non-smokers. Cereals are also eaten in almost the same quantities by these two groups. Meat and eggs, which are savoury foods and are often cooked with additional fat, are preferred by the smoker, whereas sweet foods are preferred by the non-smoker (Fig. 2).

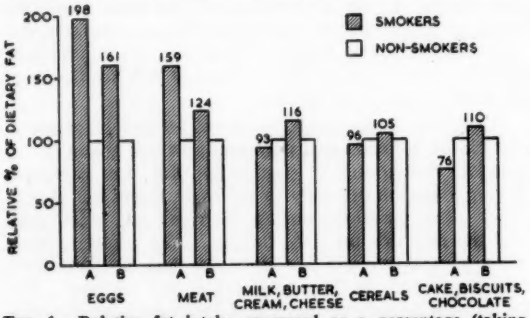

FIG. 1.—Relative fat intake expressed as a percentage (taking non-smokers as 100% in each case), showing comparative results from group A and group B in the different food groups.

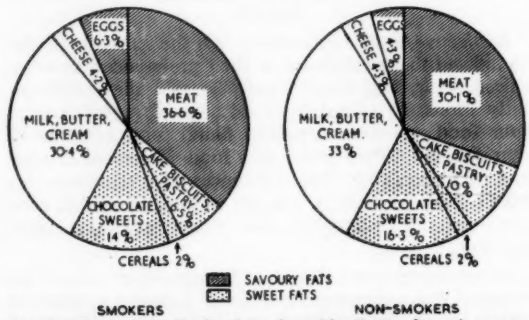

FIG. 2.—Percentage distribution of weekly dietary fat. A greater percentage of fat in the food of smokers compared with non-smokers is in the form of savoury fats. Note the segment taken up by dairy fats is similar in the two groups, but that from sweet food fats is greater in the non-smokers.

Discussion

By their very nature, dietary surveys cannot provide absolute values, and with regard to food preferences one has to rely on subjective information. For this reason, so far as was possible, the information was collected blindly in that the individual recording the dietary data was unaware whether a smoker or a non-smoker was being questioned.

The problem was tackled using three different approaches. Firstly, the subjects indicated their preference for certain foods with distinctive tastes. Next an assessment of the fat intake from the more common foods in their daily diet was made. Finally, two separate random samples, drawn on two separate occasions, were subjected to a detailed dietary analysis.

Each approach directs one's attention to differences in food preferences between smokers and non-smokers. The results indicate that smokers on the average seek gustatory satisfaction in consuming foods that have had their flavours and palatability enhanced by spices, herbs, vinegar, condiments, and fat. The differences in total fat intake, although not great, were consistent and of the same order in each instance. This was also seen in the 1955 survey in the same area (Bronte-Stewart, 1956). However, the differences in food preferences, particularly with regard to fatty foods between smokers and non-smokers, is seen to best advantage not when one takes food consumption as a whole but when one pays attention to individual food items. It was because of this that the analysis of fat intake from the different food items was repeated in a second random sample (group B), the results of which confirmed the findings in group A—namely, that a significant difference exists between smokers and non-smokers with regard to consumption of meat and eggs.

In controlled feeding studies (Bronte-Stewart *et al.*, 1956) it was shown that meat and eggs elevate the serum cholesterol levels more rapidly and to a greater extent than most other fats.

Possibly this could account for the differences in serum cholesterol levels that have been reported in surveys on smokers and non-smokers (Gofman *et al.*, 1955; Thomas, 1958; Karvonen *et al.*, 1959; Bronte-Stewart, 1961).

Summary

The 156 individuals who were subjected to the tasting tests were questioned about their food preferences.

1. Whether they preferred salty, spiced, sour, or bland food. It was shown that non-smokers preferred bland food, and a fairly high proportion of smokers preferred salty and spiced food.

2. In addition, the fat content of their diet was analysed, and it was shown that smokers consumed more fat than non-smokers, but the differences were small.

3. On more detailed examination marked differences existed in the types of foods that constituted the overall fat intake in two independent groups. Heavy smokers consumed significantly more meat and eggs than did non-smokers. Non-smokers consumed more fat in the form of cakes, sweets, and chocolate.

It was concluded that in these samples cigarette smoking affected food preferences.

These studies were supported in part by research grants from the National Heart Institute, U.S.A. (PHS: H-3316), and the South African Council for Scientific and Industrial Research.

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A new British Standard (B.S. 3286: 1960) which describes the method for laboratory evaluation of disinfectant activity of quaternary ammonium compounds by suspension test procedure is now available, and copies may be obtained from the British Standards Institution, Sales Branch, 2 Park Street, London W.1. It costs 6s., and postage is extra to non-subscribers.

CROUP AND ITS MANAGEMENT

BY

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A hoarse voice, obstructed stridulous breathing, and a characteristic harsh vibrant cough constitute "croup" which is due to laryngo-tracheo-bronchitis. The term is also used loosely to encompass the less common condition "supraglottic oedema" in which airway obstruction occurs not at the vocal cords but at the level of the epiglottis and aryepiglottic folds. Both conditions occur characteristically in infants and young children, and may cause complete obstruction of the airway.

The decline of diphtheria in immunized communities and the recent identification of formerly anonymous viral agents causing croup have changed the perspective of the condition, whose dangers are still emphasized by reports from pathologists to coroners' courts (Bowden and French, 1951; Jones and Camps, 1957).

The difficulty of predicting the course of the disease in an infant is well known to medical practitioners, but probably not to lay people, who underestimate the danger of croup. General practitioners are probably best placed to educate the community in this respect.

This review of the subject is based on experience at Fairfield Infectious Diseases Hospital, Melbourne, where diphtheria has been an uncommon cause of croup in recent years by contrast with the various respiratory viruses.

Laryngo-tracheo-bronchitis

Early symptoms of fever and hoarseness suggest that the larynx alone is involved, but this is by no means the only functional change dictating the management of laryngitis, which is almost invariably accompanied by inflammatory changes in the trachea and bronchi.

The severe effects of the disease are usually mechanical, producing airway obstruction. This is most commonly seen in infants and young children, whose respiratory channels are narrow, but also occasionally in adults.

Disproportionate laryngeal spasm, a notorious sequel to irritation in the vicinity of the larynx in children, aggravates the laryngeal narrowing caused by the inflammation.

The croupy cough, the evidence of fluctuating airway obstruction, and the rapidity with which complete occlusion may develop, are explained by the associated inflammatory changes in the trachea and bronchi. These lead to the accumulation in the trachea of voluminous quantities of tenacious mucus, whose evacuation is made difficult by oedema of the larynx. Transient aggravation occurs while mucus is passing through the narrowed aperture. Complete obstruction is ultimately precipitated by the impaction of tracheal mucus in the larynx.

A situation causing progressive increase in dyspnoea is established in advanced cases in which laryngeal narrowing hinders the expectoration of sputum that accumulates in the trachea, thus further reducing the airway so that the obstruction is no longer localized to the larynx. Pneumonia complicates the condition on occasions, also pneumothorax, which is rare.

Causal Agents

Infection is the usual cause of laryngo-tracheo-bronchitis, but on rare occasions anaphylactoid oedema of the larynx and spasm of bronchi in allergic individuals may simulate the condition. Infections causing the condition form three main groups: laryngeal diphtheria (bacterial toxin), viral infection, and bacterial infection.

The possibility of an inhaled foreign body should be considered if the onset is abrupt and the signs are atypical.

Laryngeal Diphtheria

In an unimmunized community laryngeal diphtheria is a common and most dangerous form of croup. Immunization in Australia has reduced this disease to a minor numerical status, but its potential remains, and since successful treatment requires the immediate administration of diphtheria antitoxin, this disease remains the prime consideration in a diagnostic classification (see below).

The term "diphtheritic laryngitis" is incomplete in that the membrane rapidly spreads to line the trachea and bronchi, even the small terminal bronchi.

Respiratory Virus Infections

The respiratory viruses attain major importance as a cause of laryngo-tracheo-bronchitis by virtue of their great prevalence and also their capacity to predispose to bacterial infection of the airways and lungs. A "virus group" has long been recognized by the observation of laryngo-tracheo-bronchitis due to the enanthema of measles, but until recent years the group was ill-defined. It is now apparent that the list of viruses associated with croup includes all the known respiratory viruses, the condition being one manifestation of respiratory virus infection, particularly in young children.

From November 1, 1959, to May 31, 1960, respiratory viruses were isolated from 50% of 159 children admitted to the Fairfield Hospital with croup. More than half of the remaining cases appeared to be viral in origin also, and those due to or aggravated by bacterial infection form about 10% of the group. The proportions, of course, vary with the prevalence of the various respiratory pathogens.

A concentration of severe and complicated cases of influenza at Fairfield Hospital during the pandemic of 1957 demonstrated the capacity of influenza virus to cause laryngo-tracheo-bronchitis (Forbes, 1958). About this time newly developed techniques for virus isolation revealed prevalent, formerly anonymous agents which have been named the croup-associated (C.A.) virus (Chanock, 1956; Beale *et al.*, 1958) and the haemadsorption (H.A.) virus types 1 and 2 (Channock *et al.*, 1958). These have been reclassified as follows:

Myxovirus parainfluenzae type 1 = H.A. virus type 2 and Sendai virus
" " " 2 = C.A. virus
" " " 3 = H.A. virus type 1 (Cook *et al.*, 1959)

During the 12 months preceding March, 1959, parainfluenza viruses type 1 and type 3 were grown from epidemic numbers of children admitted to Fairfield Hospital with laryngo-tracheo-bronchitis (Ferris, 1960; Forbes, 1960). More recently, parainfluenza virus type 2 (C.A. virus) has been isolated from similar cases (Fairfield Hospital, unpublished).

Influenza virus type B and adenovirus types 1, 2, 3, 5, and 7 have been associated with laryngo-tracheo-bronchitis; also certain of the enteroviruses appear to be causally related to the condition at times. Coxsackie virus type A9 has been isolated repeatedly from infants with laryngo-tracheo-bronchitis, and to a lesser extent E.C.H.O. virus types 14 and 10 (Fairfield Hospital, unpublished).

Thus the current list of virus agents causing laryngo-tracheo-bronchitis is as follows: influenza viruses (types A and B); parainfluenza viruses (types 1, 2, and 3); adenoviruses (types 1, 2, 3, 5, and 7) (incomplete); measles virus; E.C.H.O. virus types 14 and 10 and Coxsackie virus type A9 (tentative).

Bacterial Infections

Haemolytic streptococci group A and staphylococci are the bacteria most commonly associated with laryngo-tracheo-bronchitis. Infection with these organisms is characterized by the appearance of voluminous quantities of purulent tracheal mucus. The tracheal mucus produced by staphylococci infection is viscous and tenacious, so that its evacuation is extremely difficult.

The respiratory viruses described above probably predispose to most of these infections.

Pneumococcal infection is often superimposed upon respiratory virus infections, but pneumococci are a more frequent cause of pneumonia in such cases of severe airway obstruction, although impairment of the airway is at times an association of this dual infection. The danger of superimposed bacterial infection is greatest in infants and children who are carrying one of these organisms at the time respiratory virus infection occurs, in which case the history of illness may be short and severe.

Anaphylactoid Laryngeal Oedema

The condition of laryngeal oedema and bronchospasm is uncommon but may simulate infective croup. It is usually precipitated by the administration of an allergen such as horse serum to a sensitized person, but may also occur with the inhalation of a natural allergen or with infection.

A known allergic child or adult should be observed for at least one hour after the injection of a sensitizing antigen.

Supraglottic Oedema

Supraglottic oedema (syn. epiglottitis) is a generalized disease in which gross oedema of the epiglottis and aryepiglottic folds is associated with septicaemia (Sinclair, 1941; Alexander *et al.*, 1942; McLorinan and Ferris, 1956).* *Haemophilus influenzae* type B is the causal organism in the vast majority of cases. *Streptococcus haemolyticus* group A is associated with a small proportion.

The disease is exceedingly acute, the history of respiratory difficulty being invariably only a few hours. The associated septicaemia ensures early respiratory fatigue, and death may occur within eight hours of the development of laboured respiration.

Prior to the use of appropriate antibiotics, the development of *H. influenzae* meningitis was not an uncommon sequel in surviving patients. Jones and Camps (1957) have shown that inflammatory lesions in the vicinity of the epiglottis may be found in children dying of meningitis due to *H. influenzae* type B.

This was one of the conditions which formerly invoked the coroner's verdict, "smothered by bedclothes," in infants who were found dead in their cots in the morning, having gone to bed the previous evening with minimal or no symptoms (Bowden and French, 1951).

Symptomatology

Laryngo-tracheo-bronchitis and supraglottic oedema differ in certain symptoms and signs, so that supraglottic oedema may be identified clinically. The evidence of airway obstruction is common to both lesions.

Laryngo-tracheo-bronchitis

The development of "laryngitis" is usually preceded by a history of an infection of the upper respiratory tract often described by the relatives of the infant as a "cold."

The symptoms and signs of developing respiratory obstruction are summarized in the following list, in which the signs of increasing obstruction are given in order from above. These signs are cumulative and are associated with an increasing respiratory rate and increasing dyspnoea.

Stage 1	Fever Hoarseness of voice, often progressing to aphonia Croupy cough Inspiratory stridor when disturbed
Stage 2	Continuous respiratory stridor Lower-rib retraction Retraction of soft tissues of the neck Accessory muscles of respiration come into operation Respiration becomes laboured
Stage 3	Signs of anoxia and carbon dioxide retention Restlessness Anxiety Pallor Sweating Rapid respiration
Stage 4	Intermittent cyanosis Permanent cyanosis Cessation of breathing

In the development of obstruction the symptoms may fluctuate owing to transient plugging of the larynx with mucus from the trachea. When laryngeal obstruction has been prolonged, asphyxia due to fatigue is a great danger. The onset of laboured breathing is usually slow by contrast with the rapidity with which complete obstruction may develop in the later stages.

Provisional Diagnosis.—The patient is often seen early in this train of signs and symptoms. The suspicion of diphtheria has an important bearing on the management of a patient in that diphtheria antitoxin is administered on clinical grounds pending subsequent isolation of the organism by culture of throat or tracheal swabs.

If, on examination, faucial membrane is found in association with the laryngitis, diphtheria is an arbitrary diagnosis. On the other hand, if the patient appears toxic and the condition has been developing over a period of 36 to 48 hours, this diagnosis must be considered, even in the absence of faucial membrane, as the primary focus may occur in the larynx.

In many of the virus infections the throat may be palely reddened and the pharynx have a granular appearance due to patchy lymphoid hyperplasia. On the other hand, florid tonsillitis may be present in some cases of bacterial laryngo-tracheo-bronchitis. However, the

*During a five-year period ending in 1955, 33 cases of supraglottic oedema were admitted to Fairfield Hospital. Blood was cultured from 19 cases, nine of which yielded *H. influenza* type B. This organism was cultured from swabs of the throat or trachea of 24 cases. Tracheotomy was required in most cases. There were no deaths.

interrelation of these causes makes the use of antibiotics mandatory, so that, unlike diphtheria, early clinical distinction is not vital to management (see below). In the virus infections, the blood leucocyte count is often normal or low, with a predominance of lymphocytes.

Supraglottic Oedema

Supraglottic oedema differs from laryngo-tracheo-bronchitis in its onset (McLorinan, 1946). Since the larynx is not primarily involved in this condition, hoarseness and aphonia are not primary symptoms. The noisy obstructed breathing of supraglottic oedema does not develop as inspiratory stridor as it does in laryngo-tracheo-bronchitis, but as an expiratory snore due to vibration of the flabby swollen tissue of the epiglottis and aryepiglottic folds. The children are pale and toxic-looking owing to the associated septicaemia.

On examination, if the back of the tongue is depressed the epiglottis may often be seen as an oedematous red globular structure. If the epiglottis cannot be seen, the diagnosis may be made by "gagging" the child and passing a finger over the base of the tongue where the epiglottis is felt to be rounded or "marble-like."

In supraglottic oedema the progression of obstruction is rapid, inexorable, and aggravated by the associated septicaemia so that tracheotomy is almost inevitable.

Management

The basis of successful management lies in the early diagnosis of laryngeal diphtheria and supraglottic oedema, both of which should be considered in every case, in repeated observation and in the ability to recognize the degree of airway obstruction in its various stages

For the majority of patients with croup medical attention is sought in the earlier stages of developing obstruction. There are no criteria by which the future progress of the condition may be predicted except when diphtheria and supraglottic oedema, which almost inevitably cause severe obstruction, are present. This uncertainty makes constant observation of the patient with croup essential.

Patients with laryngitis and a croupy cough commonly fail to develop laboured breathing and do not progress beyond stage I of the symptomatology (see above). Patients at this stage may be observed at home, but parents should be made aware of the possibility of rapid development of respiratory obstruction so that they will review the child's condition from time to time, particularly at night.

The home treatment of the condition takes a suitably modified form of that described for the hospital management of more severe cases.

Patients in whom the symptoms of obstruction (for whatever cause) have progressed to stage 2, during which breathing becomes increasingly laboured, require observation in hospital.

Management in Hospital

At Fairfield Hospital these patients are nursed in a steam-tent (which has been found superior to various atomized wetting agents) to reduce evaporation of fluids from the respiratory tract, so minimizing the inspissation of the tracheal secretions, which are difficult to evacuate through a contracted larynx. The warm moist atmosphere lessens the patient's discomfort and ameliorates laryngeal spasm. These patients require constant nursing attention and reassurance to reduce their apprehension apart from the necessity for continuous observation. Ideally, they should be nursed and observed by staff with specialized experience in this field.

Dangerous Drugs.—The employment of oxygen, sedation, or atropine is perilous in this condition. The administration of oxygen, particularly under pressure, will disguise the symptoms even in the later stages of obstruction, so that the airway may suddenly be completely occluded by tracheal mucus without adequate prior warning. The use of oxygen is permissible only when a decision to perform a tracheotomy has been made or during the transport of a patient with severe respiratory obstruction. Sedation in all its forms carries the risk of respiratory depression and exaggerates the effects of fatigue in a patient in whom respiratory obstruction has been prolonged. Atropine increases the viscosity of tracheal mucus and so aggravates the difficulties of its evacuation.

Investigations.—Initially, the nose and throat are swabbed for bacterial culture and the throat also for viral investigation if facilities are available. When indicated by the presence of supraglottic oedema, blood is taken for culture if this can be done without causing distress. Later in management a blood leucocyte count is often helpful in distinguishing laryngo-tracheo-bronchitis of viral and bacterial origins, and *x*-ray examination of the chest is advisable to exclude associated pneumonia or pulmonary collapse.

Specific Treatment

Specific treatment with diphtheria antitoxin and antibiotics should be started immediately after samples have been taken for investigation on the basis of the provisional clinical diagnosis.

Diphtheria Antitoxin.—If diphtheria is suspected a dose of 30,000 units will be required to treat the laryngeal focus. This dose is supplemented according to the severity of a faucial lesion.

Antibiotics.—The majority of cases of laryngo-tracheo-bronchitis in this community at present are caused initially by a respiratory virus. These agents commonly predispose to secondary bacterial infection. The clinical distinction of the two situations is uncertain and bacterial aggravation of a primary virus infection may be so rapid in these more severe cases that it is advisable to assume that the combined infection is already established. Pneumococci and group A streptococci are the most frequent secondary invaders, but, when established, staphylococci may be particularly dangerous. Penicillin is the drug of choice for the first two pathogens and forms the basis of antibiotic treatment. In the less severe cases it may be used alone. Tetracycline is used in conjunction with penicillin to combat possible staphylococci and *H. influenzae* infections in cases of moderate severity. In this group of patients, who are admitted direct from their homes, the majority of staphylococci are sensitive to the tetracyclines, as are the haemophils. On the other hand, if the disease is severe or if the diagnosis of supraglottic oedema is made, so that the patient's life will be endangered by the delay in providing effective antibiotic treatment, intramuscular chloramphenicol, which has a broader and more certain cover, is used in conjunction with penicillin. Penicillin and erythromycin are used as adjuncts to diphtheria antitoxin to clear the foci of diphtheria organisms.

Indications for Tracheotomy

The plight of these patients may form a clinical emergency at the time of their admission to hospital, and if cyanosis is present (stage 4, see above) immediate tracheotomy is life-saving.

If, on admission, the symptoms have progressed to stage 3, with the accumulated signs of airway obstruction in conjunction with evidence of anoxia and carbon dioxide retention, tracheotomy is at times necessary, but two courses of management are open according to the duration of symptoms and the diagnosis. In those cases in which the development of the disease has been slow and restlessness appears to have been recently aggravated by laryngeal spasm, a trial of conservative treatment in a steam-tent may be successful. On the other hand, if progression of symptoms has been rapid and inexorable, or if rather severe obstruction has been prolonged so that fatigue is beginning to ensue, tracheotomy will be necessary.

The development and persistence of restlessness, anxiety, pallor, and sweating in association with an increasing respiratory rate in spite of appropriate early treatment, indicate the necessity for tracheotomy. The appearance of cyanosis, even if transient, calls urgently for tracheotomy. If supraglottic oedema is the cause, a tracheotomy is likely to be required.

Tracheotomy

A "high" tracheotomy at the site of the second and third tracheal rings is most suitable in these cases. The operation is performed under local anaesthesia, but if the patient is comatose anaesthesia is obviously unnecessary. Attempts to provide general anaesthesia are dangerous, and bronchoscopy is unnecessary, time-consuming, and traumatizing in severe cases. Attempts to pass a bronchoscope in supraglottic oedema can be lethal.

Management of Tracheotomy

The relief produced by tracheotomy in these cases is usually dramatic, but the effect is temporary if the patient is subsequently mismanaged. Unattended, the tracheotomy tube will rapidly become obstructed with mucus or membrane.

Surgical emphysema is a sequel to tube obstruction which forces the expired air to seek egress around the tube.

Considerations.—The tracheotomy provides not only an alternative airway but an avenue for the removal of secretions by suction from the trachea and bronchi. In using a rubber urinary catheter to aspirate the trachea it should be remembered that the catheter itself constitutes an obstruction to the airway while it is in the trachotomy tube. Improperly used, it may cause surgical emphysema. If the tube is obstructed the pulmonary air will be forced out of the trachea around the tube and into the cervical tissues by the inevitable coughing. The nasopharynx, which normally humidifies inspired air, is short-circuited by tracheotomy, and other means of performing this function must be found to prevent the drying of the respiratory mucosa and consequent inspissation of secretions.

Nursing Procedures.—The patient is nursed in a steam-tent as before to humidify inspired air. The inner tube is introduced into the tracheotomy tube to facilitate cleaning, which is carried out repeatedly. A saturated solution of sodium bicarbonate is introduced through the tube into the trachea to liquefy mucous secretions (the alkalinity favours this), to aid aspiration, and to humidify the respiratory mucosa. After this procedure the trachea is aspirated with a urinary catheter of suitable size.

Removal of the Tube

The tube may be removed when the volume of tracheal mucus has become negligible (the presence of the tube itself stimulates the production of tracheal mucus) and the laryngeal airway is competent. This is usually possible between three and five days. It is important that the tube be removed by the fifth day, as the risk of a "retained" tube is increased when it is allowed to remain for longer periods.

Removal of the tube must be regarded as a trial, and the child must be observed closely to detect persistent laryngeal obstruction which may require the reintroduction of another, perhaps smaller tube. It is a mistake to deliberately obstruct the tracheotomy tube for trial for long periods, as this is merely impairing the airway.

If difficulty is experienced (not common) in removing the tube it is preferable to use a series of tubes of diminishing size. In our experience, difficulty in removing the tube occurs when there is an associated pulmonary or laryngeal lesion.

The wound usually closes and heals quite rapidly after the tube is removed. Secondary suture does not assist healing or minimize scarring. A simple gauze dressing, perhaps with a topical antibiotic such as bacitracin, is sufficient.

Summary

This paper gives an account of the common causes of croup, some of which have been identified in recent years.

Laryngo-tracheo-bronchitis, which originates in three main categories—laryngeal diphtheria, and viral and bacterial infection—is distinguished from supraglottic oedema (syn. epiglottitis), which is usually associated with septicaemia and is caused by *H. influenzae* type B.

The symptomatology is described in conjunction with the management practised at Fairfield Infectious Diseases Hospital, Melbourne.

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Some of the problems raised by vaccination procedures are discussed in a report of a European Technical Conference on the Control of Infectious Diseases through Vaccination Programmes. The report gives a broad picture of the legislation in force regarding vaccination in Europe. (W.H.O. Technical Report Series, 1960, No. 198, 21 pages. Price 1s. 9d. Also published in French and Spanish. Obtainable from H.M.S.O., P.O. Box 569, London S.E.1.)

SOME FURTHER VIRUS ISOLATIONS FROM COMMON COLDS

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We have recently reported the successful cultivation of some viruses from nasal washings collected from three patients suffering from common colds (Tyrrell *et al.*, 1960). The viruses grew and produced a cytopathic effect in cultures of human-embryo-kidney cells when these were maintained at 33° C. rather than 36° C., and in a medium with a lower bicarbonate concentration and therefore a lower *p*H than is usually employed (Tyrrell and Parsons, 1960). These findings have been confirmed by Hobson and Schild (1960). We also presented evidence that the viruses we collected were able to cause colds after two to eight passages in tissue culture and reinoculation to man.

We have now expanded this work by testing many more specimens in tissue cultures and in volunteers, and the results are reported here.

Materials and Methods

Tissue Cultures.—Human-embryo-kidney cultures and secondary rhesus-monkey-kidney cultures were used, and were prepared as described elsewhere (Tyrrell *et al.*, 1960). The maintenance medium used consisted of 2% filtered unheated calf serum and 0.25% lactalbumin hydrolysate (Nutritional Biochemicals Corporation, Cleveland, Ohio) and Hanks's saline containing 0.03% of sodium bicarbonate with 100 μg. of streptomycin, 100 units of penicillin, and 20 units of mycostatin per ml. All cultures were maintained in a roller drum at 33° C.

Virus Isolation.—Nasal washings taken with broth saline or Hanks's saline, or fluids from swab specimens, were thawed and 0.3 ml. was inoculated into each of three or four culture tubes. The medium was changed after one day and again after about five days of incubation. If a cytopathic effect occurred the fluid phase of the culture was removed and stored at −60° C., usually at the stage at which focal lesions were present or were becoming confluent. Passages were often unsuccessful if the fluids were harvested from tubes showing advanced degeneration. Further passages, using 0.2 ml. of culture fluid per tube, were made. At first we passed fluids from both positive and negative cultures. Later, because passages from negative cultures were uniformly negative, and because of a shortage of tissue cultures, only positive cultures were passed.

Storage of Viruses.—All specimens were stored in the laboratory at about −60° C. in the absence of CO_2. Some specimens from Cirencester and Epsom were stored at −20° or −40° C. for a few days or weeks before reaching the laboratory.

Sources of Materials.—The washings were mainly collected from patients in the acute phase of typical common colds of varying degrees of severity. Two main collections had been made—at the National Institute for Medical Research at Mill Hill and at Salisbury. The first, in 1951, had been moved about from one laboratory to another, and was, of course, nine years old when tested. The second had been made between 1955 and 1960, mainly from cases of colds in laboratory staff: there were, however, practically no clinical details available about these illnesses. Dr. D. Hobson kindly sent us some selected specimens which he had collected from medical and office staff in Sheffield early in 1960, including some specimens from which he had isolated viruses. The remaining two groups were collected by general practitioners. Dr. R. E. Hope Simpson supplied nose and throat swabs and nasal washings from adults and children in Cirencester who suffered from colds in February and March, 1960, and Dr. E. J. C. Kendall supplied similar specimens from boys at a residential school in Epsom in May and June, 1960.

Isolation of Fresh Strains

The specimens tested have yielded a number of cytopathic viruses: the results are summarized in Table I. The cytopathic effects observed were in all cases indistinguishable from those described earlier (Tyrrell and Parsons, 1960). However, the extent varied from one or two foci in one tube, appearing after 10 to 14 days' incubation and regressing a few days later, to a marked cytopathic effect starting three or four days after inoculation and destroying the whole culture within a week. Human-embryo-kidney cultures often contain groups of rounded cells, and by the end of two weeks' incubation some cells at the edge of the sheet in uninoculated cultures may undergo granular degeneration and break up. It has therefore been found best to use a final magnification of ×30–70 and to search the whole cell sheet at least every second day for groups of cells in an early stage of virus degeneration (Fig. 1). These foci tend to occur near the edge of the cell sheet (Parsons and Tyrrell, 1961) and may be recognized even if the focus contains only a dozen or so cells. These virus-infected cells are refractile, angular rather than rounded in outline, and from the edge of the cell project threads and globules of cytoplasm. In later stages they become completely rounded or converted into masses of granules.

The cytopathic effect produced by five viruses was studied in more detail by examining fixed and stained preparations, and was in all cases indistinguishable from that produced by our prototype strain H.G.P. and very

TABLE I.—*Isolation of Viruses from Washings and Swabs Collected from Patients with Colds*

Year of Collection	Place	No. Tested		No. of Cytopathic Viruses Isolated in Human-Kidney-Cell Cultures
		Swabs	Washings	
1951 ..	National Institute for Medical Research, London and Salisbury	—	21	2 (2)*
1955–60	,,	16	64	14† (2)
1960 ..	Sheffield (selected specimens)	—	9	6
1960 ..	Cirencester	11	13	0 (1)
1960 ..	Epsom	13	3	3 (1)
	Total ..	40	110	25 (6)

* Figures in parentheses denote appearance of specific cytopathic effect which cannot be passed serially.

† Including the three strains previously reported (Hitchcock and Tyrrell, 1960).

like that of enteroviruses. Thirteen of our strains were also tested at the higher *p*H and temperature of conventional tissue cultures: in no instance was the cytopathic effect as good as in our standard "common cold" conditions, and with seven strains the cytopathic effect was completely suppressed. Most enteroviruses might be expected to grow better, or at least equally well, in cultures at high *p*H and high temperature (Barron and Karzon, 1957).

Two viruses were isolated from 21 specimens collected in 1951. The isolation rate is low, perhaps because of unsatisfactory conditions of storage. It is, however, of interest that viruses of the type were in circulation at that time; it will also be valuable to have these strains for later serological studies. Viruses were isolated more often from the specimens collected between 1955 and

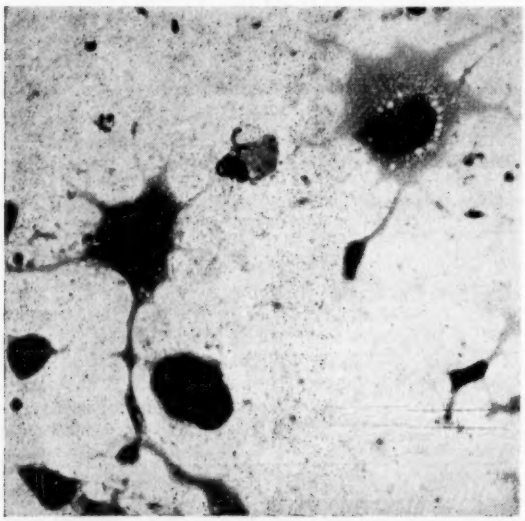

FIG. 1.—High-power view of cells undergoing characteristic degeneration in a culture infected with H.G.P. Cells of this type are the hallmark of virus degeneration when difficulties arise in interpreting changes in human-embryo-kidney-cell cultures. Fixed and stained with haematoxylin and eosin. (×441.)

1960, probably because they were better preserved. The very high rate of isolation from the Sheffield specimens is due to their being selected, and is discussed below. Only one virus was isolated from the nose or throat swabs tested. This might have been because the prevailing virus at the time, particularly in the outbreak at Cirencester, was not cytopathic (see below). On the other hand, we suspect that virus is more readily isolated from nasal washings than from throat or nose swabs; this point is being studied further.

When taken together these results show that viruses cultivable by our modified technique have been current over most of the years since 1951, and that they may be recovered from both children and adults suffering from common colds.* It is of interest that we isolated no adenoviruses or enteroviruses from these washings. The washings D.C., Re., Br., H.G.P.57b, and Gi. were tested for the presence of parainfluenza viruses, using monkey-kidney cells and the haemadsorption technique, but no virus was detected.

*Elsewhere in this paper such viruses are called "cultivable viruses." Viruses found in washings and which cannot be grown in our modified conditions are called "non-cultivable."

Volunteer Studies

We next performed experiments in volunteers to determine whether the washings from which we isolated viruses contained agents which could produce colds. The methods were those used in earlier experiments (Tyrrell *et al.*, 1960), but in most trials we collected nasal washings using Hanks's saline. The washings were taken when a volunteer had suffered for about a day from symptoms which suggested that he was developing a cold. At the same time a washing was taken from the volunteer's companion in isolation, or from another volunteer in the trial who had received the same inoculum and had not developed a cold. It can be seen from Table II that all but one of the washings from which a virus was isolated produced colds in volunteers. (As the specimen from B631 was very small, only four volunteers could be inoculated, and such a result might easily occur by chance with a positive specimen.) We further tested the viruses after they had been passed four times in tissue culture (Table III). This enabled us to test the 1951 and some other strains of which only a little remained in the form of nasal washings. It can

TABLE II.—*Cultivation of Viruses from Cold Washings (Only Those Viruses are Tabulated Which Were Tested Both in Volunteers and in Cultures)*

Strain	Year of Cold	Provisional Strain Designation	No. of Colds in Volunteers given Washings‡	Cytopathic Effect in Human-Embryo-Kidney Cultures
Ri*	1956	—	0/6	0
H.G.P.56	1956	—	0/9	0
Pe.	1959	—	0/10	0
H.S.	1960	—	1/11	0
Ba.§	1960	—	0/7	0
D.C. and derivates	1953	—	7/27	0
Re.*	1956	—	6/8	0
Br.	1956	—	2/7	0
H.G.P.57b	1957	—	3/6	0
Gi.*	1957	—	3/7	0
P.K.†	1956	Salisbury/1/56M	5/11	+
Or.	1956	Salisbury/2/56H	2/4	+
Bo.	1956	Salisbury/3/56H	3/8	+
H.G.P.57a†	1957	Salisbury/1/57M	3/14	+
Th.	1959	Salisbury/1/59H	3/6	+
H.G.P.59	1959	Salisbury/1/59H	4/6	+
16/60 Sheffield	1960	Sheffield/1/60H	2/4	+
30/60 ,,	1960	Sheffield/2/60M	2/7	+
B631 Epsom	1960	Salisbury/1/60H	0/4	+

* These specimens came from volunteers who developed colds after being inoculated with experimental material. Ri. and Re. received organ culture fluid and Gi. washings from a 1955 cold.

† These strains were described in a previous paper (Tyrrell *et al.*, 1960).

‡ The numerator denotes the number of colds occurring and the denominator the number of volunteers inoculated. In parallel with these experiments 101 volunteers received saline or fluids from uninoculated tissue cultures and 2 developed colds.

§ This specimen was a pool of fluids from nose and throat swabs collected from a mother and child developing colds on the same day.

TABLE III.—*Production of Colds by Viruses Passed in Tissue Cultures*

Strain	Year of Cold	Provisional Strain Designation	No. of Passages in Culture	Dose of Virus Given (TCD_{50})	No. of Colds in Volunteers Given Culture Fluids
D.C.	1953	—	2	0	0/7
H.G.P.57b	1957	—	2	0	0/7
Gi.*	1957	—	2	0	0/7
No.	1951	Salisbury/1/51	4	300	3/7
Cl.	1951	Salisbury/2/51	4	3	3/6
Mi.	1956	—	1	?	2/6
Or.	1956	Salisbury/2/56H	4	3,000	3/8
P.K.†	1956	Salisbury/1/56M	2	?	5/24
H.G.P.57a.†	1957	Salisbury/1/57M	2	?	6/24
F.E.B.†	1958	Salisbury/1/58H	8	?	4/16
Th.	1959	Salisbury/1/59H	4	1,000	1/13
16/60	1960	Sheffield/1/60H	4	1,000	4/6
30/60	1960	Sheffield/2/60M	4	<10	2/7

* † See notes to Table II.

be seen that six out of seven strains tested in this way produced colds in volunteers. There is little evidence of attenuation of the viruses except in the case of the strain Th., and we found no correlation between the number of tissue culture doses of virus inoculated and the clinical result.

Proportion of Colds Yielding Cultivable Viruses

We wished to know what proportion of cold viruses we were able to grow, and for this purpose we studied our most plentiful specimens from the second collection and two specimens from Cirencester. These were diluted 1/10 and inoculated into volunteers, and it can be seen from Table II that about half of them contained a cold-producing virus. We made repeated attempts, using several washings, to demonstrate a cytopathic effect of the D.C. strain, the apparent cultivation of which was reported in 1953 (Andrewes *et al.*, 1953); we also tested tissue culture fluids in human volunteers. All these experiments gave negative results, and it does seem that some further substantial modification of the conditions will be necessary before such a virus can be cultivated. Some modification of the culture procedure will also be needed to propagate strains such as Mi. On two occasions a typical cytopathic effect was seen in cultures inoculated with these washings, and fluid from such cultures produced colds in volunteers (Table III). It was not possible, however, to detect a definite cytopathic effect on further passage. Five other strains showed a similar behaviour; they are for the time being listed as "virus isolations" but enclosed in parentheses in Table I.

Clinical Features

We have considered critically the clinical features of the colds produced by these materials (see Table IV). It is clear that all of the colds, whether from washings or culture fluid, were typical "common colds," the characteristic features of which were coryza, frequently becoming mucopurulent, nasal obstruction, and sore throat. There was a cough in a proportion of cases. Our experimental colds have in the past been characterized by the absence of pyrexia, but in these experiments some degree of fever—maximum 101.6° F. (38.7° C.)—occurred in 12 of 63 volunteers with colds. The incubation period was in most cases between one and three days, except for one strain, Re., in which the incubation period was from three to six days. The Re. strain was also distinguished by the unusually high percentage of "takes" (six colds in eight volunteers) and by the marked degree of malaise. The No. strain produced colds in three out of seven volunteers; two of these three volunteers had nausea and diarrhoea, and so did one other, without symptoms of a cold. However, in this particular trial two control volunteers also suffered from symptoms involving the alimentary tract.

TABLE IV.—*Frequency or Average Magnitude of Selected Symptoms and Signs in Colds Produced by Certain Viruses*

Strain	Malaise	Injected Fauces	Cough	Mean of Peak No. of Handkerchiefs Used per Day	Incubation Periods (Days)
H.G.P.	1/12*	1/12	9/12	15	2·2
Kelly	0/9	0/9	6/9	12	2·3
Re.	5/6	1/6	1/6	16	3·8
16/60	1/6	0/6	1/6	10	2·3
30/60	0/4	0/4	1/4	4·7	2
Th.	1/4	2/4	2/4	26	2
Or.	3/5	4/5	3/5	15	2

* Numerator = Number of volunteers with symptoms or sign. Denominator = Number of volunteers with colds.

Although all volunteers with colds complained of sore throat there were usually no abnormalities on examination of the throat. The throat was, however, injected in three of five colds produced by Or. virus. The average number of paper handkerchiefs used at the peak of nasal discharge was between 10 and 16 a day, but the average for colds produced by strain 30/60 was 4.7 a day, while that produced by strain Th. was 26 a day. Though not conclusive, these results suggest that not only is the individual volunteer's response to a cold virus variable, but that the average clinical picture produced by some strains is different from that produced by others. Some strains produce marked constitutional upset, while others produce either a "streaming" or a relatively "dry" cold. Other workers have reported differences in the clinical picture produced by certain cold viruses (Pereira and Roden, unpublished; Jackson *et al.*, 1958). This matter will be the subject of further study.

Re-isolations of Viruses from Experimental Colds

It seemed desirable to obtain more evidence that the cytopathic viruses were the cause of the colds we were producing in volunteers. For this purpose we attempted

TABLE V.—*Recovery of Viruses from Volunteers Inoculated with Infected Washings or Culture Fluids*

Virus Inoculated	Cytopathic Virus Recovered from Volunteers	
	With Colds	Without Colds
Cultivable strains:		
No.	1/2	0/3
Cl.	1/3	0/1
Mi.	0/2	—
Or.	4/6	1/5
Bo.	3/3	1/2
Th.	4/4	1/7
16/60	5/5	—
30/60	1/3	0/4
Total ..	19/28	3/25
Non-cultivable strains:		
Re.	0/5	—
Br.	0/2	0/1

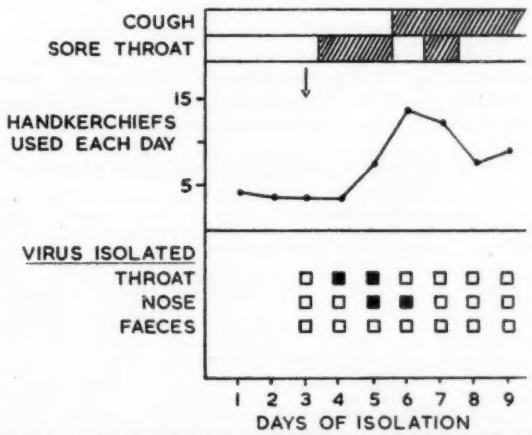

FIG. 2.—Clinical and laboratory findings in a well-studied cold produced by inoculation of washings containing H.G.P. virus. During the illness there was a 28-fold rise in homologous neutralizing antibodies. Virus was isolated separately from the nose and throat by swabs, and specimens of faeces were collected daily. Filled squares represent recovery of virus. Hatched areas indicate presence of a symptom. The handkerchief count is shown.

to isolate cytopathic viruses from volunteers with colds and from volunteers who had not developed colds after inoculation with the same virus. The results are shown in Table V. It can be seen that the rate of isolation apparently varied with the strain used, though the numbers were small. The rates of isolation were similar whether the virus had been passed in tissue culture or not. However, there were far fewer viruses isolated from the volunteers who had no colds than were isolated from those with colds. Altogether we tested washings from 28 volunteers who had developed colds after inoculation of eight different cytopathic viruses. Virus was isolated from 19 of these volunteers, but from only 3 or 25 volunteers without colds, and from none of seven volunteers who had colds induced by non-cultivable viruses. The rate of isolation from these volunteers probably represents the maximum possible at the moment. A fairly large number of volunteers have now been inoculated with H.G.P. virus, and it is clear that virus cannot always be isolated from infected volunteers, especially if specimens are collected long after the onset of symptoms (Fig. 2).

Serological Studies

We would like to have been able to present here a classification of these viruses into serological groups. At the moment, however, this is impossible. We have prepared immune sera in rabbits against our prototype viruses H.G.P. and F.E.B. The former neutralizes the P.K. virus previously described, and one strain, Ha. (from a washing collected in 1955), which, like H.G.P. and P.K., is pathogenic for monkey-kidney cells. This serum fails to neutralize all the other monkey-kidney pathogenic strains (M strains) which have been isolated, and all those pathogenic only for human embryo kidney (H strain) which we have tested so far. It is possible that only one out of seven H strains tested with the F.E.B. serum is neutralized by it. It seems, therefore, that there is definite evidence that the viruses we have isolated form a heterogeneous group both in their cell affinity and in their serological properties. This heterogeneity may hold part of the answer to the problem of the frequent recurrence of clinical colds in many individuals as may be seen in Table VI.

It will be seen from this table and Fig. 2 (legend) that there was a well-marked antibody response to natural and experimental infection with the H.G.P. strain. The antibody levels in this subject slowly declined during the course of two other colds due to viruses which could be clearly distinguished from H.G.P. by their different behaviour in tissue culture. Jackson and Dowling (1959) have shown that after experimental colds produced by inoculation of nasal secretions volunteers fail to develop colds on reinoculation with the same washing, but may develop colds if a different washing is inoculated. Antibody responses such as those shown in Table IV may be the basis of the resistance of volunteers to further infection, but this has yet to be proved.

TABLE VI.—*Study of Certain Spontaneous Colds in Subject H.G.P.*

Tests on Nasal Washings		Tests on Serum		
Date Collected	Results of Tests	Date Collected	Neutralization Titre *versus* H.G.P. 22/2/57 M Type	Neutralization Titre *versus* H.G.P. 15/12/59 H Type
		14/4/56	<5	
		8/5/56	<5	
7/12/56	No virus in T.C.*	7/12/56	5	
	No colds in volunteers			
22/2/57	M type virus.	22/2/57	5	<8
	Colds in volunteers			
		8/3/57	80	<8
		16/5/57	40	<8
26/7/57	Colds in volunteers.*	27/7/57	80	
	No virus in cultures			
15/12/59	H type virus.*	16/12/59	20	<8
	Colds in volunteers			
		31/12/59	30	16

*See Table II.

Discussion

The results show that it is often possible to cultivate a cytopathic virus from washings collected from cases of common colds, and that these viruses, when given to man, cause colds. We therefore feel it reasonable to conclude that they are the causative agents. We can thus confirm our earlier work, and further virus isolations have also been made by others in human-embryo-kidney cells (Hobson and Schild, 1960) and monkey-kidney cells (Hamre, personal communication). On the other hand, we have only begun to scratch the surface of many of the problems raised by these results. On the clinical side we need to investigate the range of diseases in which these viruses play a part. In this laboratory it will be necessary to prepare animal-immune sera and make thorough serological comparisons between the strains isolated and other viruses, and this will be a slow procedure while the source of the antigen consists of cultures of a tissue such as human embryo kidney not readily available in quantity. It is also clear that we should explore in more detail both the serological responses to infection in patients and volunteers, and also the nature of that resistance to infection which so many volunteers show.

In addition, the nature of the virus itself is worth further study, and we have made a start by developing a microplaque assay method (Parsons and Tyrrell, 1961). We intend to look for further modifications to our technique, including the use of susceptible lines of continuously cultivable cells; in this way we may be able in the future to cultivate more virus strains, do more serological work, and obtain higher virus titres than we can at the moment. Our results so far suggest to us that the strains we are growing cover what might be called a "spectrum of cultivability" ranging from those much like JH and 2060, which will grow readily in human and monkey kidney, via strains which will grow in human cells only, to others which will grow only imperfectly in human-kidney cells.

Although we have, for obvious reasons, given most attention recently to viruses which we *can* grow, we would like to know what proportion these represent of all circulating cold viruses. Existing data do not permit us to answer this question; they may well mislead us into making estimates that are too low or too high. We are, we feel, justified in ignoring for this calculation results based on materials which had been stored for nine years and also those based on swabs rather than washings. The figures in Table I then give an isolation rate of 17 definitely cultivable viruses from 80 washings (21%). This figure is probably too low, for two reasons: (*a*) the washings doubtless included a number which contained no virus of any kind and would have given no colds in volunteers; and (*b*) it appears from Table III that virus can be recovered from only about two out of three washings from people inoculated with known cytopathic viruses and developing colds thereafter.

If, on the other hand, we deal only with those washings which produced colds in volunteers and consider how many viruses we could cultivate from them, we obtain the figure of 6/10, or 60%. This may be too high a value, as they do not represent a fair sample: some of the washings were tested in volunteers because we had already obtained a cultivable virus from them.

We may perhaps expect the true figure to be between 25 and 50%, though it is likely that in some places and at some times cultivable or non-cultivable viruses will tend to prevail.

Summary

Cytopathic viruses have been isolated from 25 nasal washings taken from subjects suffering from colds.

Nine of these viruses apparently caused colds in human volunteers. Five washings from which cytopathic viruses were not isolated were shown to cause colds in volunteers.

Washings were collected from a patient during four colds which occurred in a three-year period. The washings were shown to contain three distinct agents, two of which were cytopathic.

There is preliminary evidence suggesting that different agents cause colds with slightly different clinical patterns, and induce the production of specific neutralizing antibodies.

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At the outset of the year 1959 to 1960 the Institute of Cancer Research, Royal Cancer Hospital, was concerned about its finances as there was then no guarantee that the grants it had received from the United States Public Health Service would be renewed. A generous new grant of £57,589 was, however, made by the U.S.P.H.S., and the Institute's finances were further assisted by an increase in the block grant made by the Medical Research Council (£212,800) and that made by the British Empire Cancer Campaign (£66,803). Throughout the year work proceeded on the extension to the Chester Beatty Research Institute in Fulham Road—a major undertaking involving the expenditure of £238,000 from the Trust Fund administered by the Board of Governors of the Royal Marsden Hospital in aid of the Institute, and £40,000 from the Wellcome Foundation. *(Report for the Year 1959–60.* Institute of Cancer Research, Royal Cancer Hospital.)

INOCULATION OF HUMAN VOLUNTEERS WITH E.C.H.O. VIRUS TYPE 20

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E.C.H.O. virus type 20 was first isolated in the U.S.A. from children and infants living in a residential home. The virus was recovered by inoculating tissue cultures of monkey-kidney cells with extracts of faeces and throat swabs. Many of the properties of the virus have been described (Rosen, *et al.*, 1958). Some of the children infected with the virus were well, others had minor illnesses resembling common colds, and some were admitted to hospital with a moderately severe febrile illness manifesting pharyngitis, bronchitis, diarrhoea, and conjunctivitis. It was not possible to decide whether these illnesses were due to the virus infection. Accordingly we have inoculated volunteers living in strict isolation to determine, firstly, whether adults can be infected by intranasal inoculation of the virus, and, secondly, whether such infections produce an illness, and if so of what clinical type.

Materials and Methods

Forty-three volunteers of both sexes, aged 18–45 years, were used in these experiments. They were isolated, usually in pairs, as described elsewhere (Andrewes, 1949). At the same time 33 volunteers were given culture fluid without virus. Volunteers were allocated at random to the experimental groups, and the clinical observer was unaware of the nature of the inoculum until he had completed the records. Volunteers were considered to be "ill" when the symptoms and physical signs developed after inoculation seemed to differ significantly from the state observed during the four-day quarantine period. Blood was collected before inoculation. Throat swabs and faecal specimens were collected on the first, third, and fifth days after inoculation, and a second specimen of serum and a fourth faecal specimen on the fourteenth day, as in the trials of E.C.H.O. 11 virus (Buckland *et al.*, 1959).

Tissue Cultures.—Human-embryo-lung cells were cultured as explants or after trypsinization, and monkey-kidney cells after trypsinization. All cultures were rolled at 36° C. and the medium at the time of inoculation contained 2% calf serum, 0.25% lactalbumin hydrolysate in Hanks's saline containing 0.1% sodium bicarbonate and antibiotics.

Virus Strains.—Three throat swabs from each of two patients in the U.S.A. were immersed in medium, and the fluid was tested in Bethesda for the presence of virus. The fluids were then transported in the frozen state to Salisbury and tested again. Separate pools were made of the fluid from each patient. These pools were diluted in Hanks's saline and 1 ml. was administered as nasal

drops to volunteers. The prototype strain of virus, which had been passed five or more times in monkey-kidney cells, was used for serum neutralization tests.

Virus isolations were performed in explant or trypsinized cultures or human-embryo-lung cells. Specimens were concluded to be negative after three attempts at isolation using a total of 0.6 ml. of inoculum and six tube cultures. Cultures were observed for cytopathic effects for 10 days. When the faeces or throat swabs of a volunteer yielded a virus, at least one isolate from each site was identified by a neutralization test with a specific antiserum prepared in rabbits.

Serum neutralization tests were performed by mixing serial fourfold dilutions of inactivated serum with 10–100 TCD_{50} of virus. These mixtures were held overnight at 4° C. or at room temperature for one hour because thermal inactivation of the virus was rapid at room temperature and 37° C. (see Lehman-Grube and Syverton, 1959). Each mixture was tested by inoculation into two or more cultures.

Infection of Volunteers with Swabs and Cultures

The pooled swab fluids did not contain much virus and were small in volume. As can be seen from Table I, the fluids were administered to eight volunteers. A mild illness was observed in four of the five volunteers from whom virus was recovered and in one of the three from whom it was not recovered. (However, the main feature of this one volunteer's illness was a pyrexia of 100° F. (37.8° C.), which occurred six hours after inoculation and which may not have been due to virus infection.) One illness in a virus-infected volunteer (Sun.) showed the clinical features of a mild common cold. Nasal washings were taken near the onset of this illness; these were inoculated into six further volunteers. Virus was recovered from all of these; moreover, five of them became ill.

Virus from a throat swab (collected from Sun. at the same time as the nasal washings) was passed serially in cultures of human embryo lung, human embryo kidney, and monkey kidney. The identity of the virus was checked in each case after three passages, and an attempt was made to detect contaminating viruses by adding the fluid mixed with monkey or rabbit immune serum to tissue cultures, which were then kept for two or three weeks and observed for cytopathic effects. No contaminating virus was detected. Dilutions of the pools of infected culture fluids were then administered to volunteers by the same techniques as those used for administering nasal washings. Fourteen out of 15 volunteers became infected, and 11 of these became ill. One of the illnesses which followed inoculation of material passed in human-embryo-kidney cells showed the features of a common cold in addition to a febrile illness.

TABLE I.—*Summary of Results of Infecting Volunteers with E.C.H.O. 20 Virus*

Source of Virus	Tissue-culture Passages	Dilution of Virus Inoculated	Dose Inoculated*	No. of Volunteers: Inoculated	No. of Volunteers: Infected †	No. of Volunteers: Ill	Virus Isolated from: Throat Swab	Virus Isolated from: Faeces	No. of Volunteers with Antibody Rise
Patient C	Nil	1/2	30	4	3	2‡	2	3	3
,, Str.	,,	1/2	20	4	2	2	1	1	0
,, ,,	,,	1/2	20+ antiserum	4	0	0	0	0	0
Volunteer Sun. ...	,,	1/4	300	6	6	5	6	6	5
Volunteer Sun.	3 in H.E.L.§	1/2	300,000	8	7	7	7	7	3/6
,,	3 in H.E.L.	1/2	300,000+ antiserum	8	5	3	1	5	4/7
,,	3 in H.E.K.	1/100	45,000	3	3	3	3	3	3
,,	3 in M.K.	1/300	56,000	4	4	1	4	4	1/2
Patient C	3 in M.K.	1/10	300,000	2	2	2	2	2	1/1

* Tissue-culture infectious doses determined in cultures of human-embryo-lung cells.
† Number of volunteers from whom virus was recovered on one or more occasions.
‡ In addition, one volunteer was ill but not infected.
§ Human embryo lung, human embryo kidney, and monkey kidney.

Neutralization Experiments

Each of two pools of virus prepared in human embryo lung was mixed with an equal volume of undiluted hyperimmune monkey or rabbit antiserum and held overnight at 4° C. The mixture was diluted immediately before inoculation to give the same final concentration of virus pool as was administered in the parallel tests without serum (shown in the previous line of Table I). The virus was not completely neutralized in one pool, as judged by tests in tissue cultures, and some volunteers did become infected after receiving each of the pools. Two illnesses occurred in the five volunteers infected with the virus and one in a volunteer from whom a virus was not recovered. In contrast to this result, no illnesses or virus infections were observed in four volunteers who received the throat swab material from patient Str. after similar treatment with the monkey immune serum which had been used with the tissue-culture-passed virus.

Recovery of Virus

The data in Table I on the recovery of virus show some points of interest. Firstly, virus was recovered both from throat swabs and from faecal suspensions. Thirty-seven volunteers sent back by post specimens of faeces taken about two weeks after the day of infection, and 18 of these contained virus. The general pattern of virus excretion is thus like that found in similar experiments with E.C.H.O. 11 virus (see Buckland *et al.*, 1959). However, the virus was usually found in the throat on the day after inoculation of a large dose, but generally not until later after inoculation of a small dose.

Where practicable the amount of virus in the throat swab and faecal specimens was determined by titration. Fig. 1 summarizes these data. It can be seen that there are no gross differences in the levels of virus reached after successful infection by the various inocula used. Furthermore, the general pattern of excretion is similar to that observed in earlier experiments with E.C.H.O. 11 virus in that the titres rise earlier in the pharynx than in the faeces, while later on more virus is found in the faeces than in the throat swabs. However, there was no significant difference in the amount of virus excreted by volunteers who were infected but remained well and those who were infected and became ill. The pattern of excretion is rather different from that found with the Coe virus, in which virus was usually more readily recovered from the throat than from the faeces (Parsons *et al.*, 1960).

Paired sera from most volunteers were titrated for antibodies though none or only single samples were available from a few volunteers. No neutralization (titre <4) was found in the first specimens of serum from 24 out of 34 volunteers. Only four volunteers failed

to become infected after being given virus, and two of these had the highest levels of neutralizing antibody of all. No antibody was detected in the first specimens from the other two volunteers who were not infected, but they received only a small dose of virus. Fourfold or greater rises in antibody titre were found in 20 of 25 pairs of sera of the volunteers from whom virus was recovered. No rises occurred in volunteers from whom virus was not recovered. Small batches of human-embryo-lung and human-thyroid culture had perforce to be used in some of the neutralization experiments: some inconsistent results were found, probably due to the differing sensitivity of the tissues to virus. Twenty-seven pairs of sera were then tested at the National Institute of Health, and some of them again at Salisbury, using monkey-kidney cultures throughout, and except in three instances, where antibody rises were found at the former but not at the latter laboratory, the results were in agreement. In the three instances mentioned the results have been regarded as positive.

Illnesses and Their Relation to Virus Infection

Virus was recovered from 32 of the 43 volunteers who were inoculated, and 24 of these were thought by the clinical observer to have a definite illness. One of the 11 volunteers who were not infected with the virus became ill. The type of illness observed was in general not that of a typical common cold, but two volunteers showed typical coryza with some additional symptoms as described below. The incubation period varied from one to five days (average 2.5 days) and then followed generalized influenza-like symptoms and some respiratory symptoms. As can be seen from Table II the main constitutional symptoms were malaise, headache, and aching limbs, and it is of interest that 14 volunteers were febrile (oral temperature greater than 99.2° F.: 37.3° C.), the maximum oral temperatures ranging up to 102° F. (38.9° C.) (average 100.3° F.: 37.9° C.). The commonest respiratory-tract symptom was sore throat, noted in 17 cases, without observable changes except redness of the fauces in five cases. There was, however, tender enlargement of the cervical lymph nodes in six volunteers. Alimentary-tract symptoms were not prominent but occurred in eight subjects. Fig. 2

TABLE II.—*Frequency of Various Symptoms in Volunteers*

	No. of Volunteers with Indicated Symptoms		
	Inoculated and Infected* (32)	Not Inoculated (33)	Inoculated but Not Infected† (11)
Malaise	20	0	2
Headache	15	1	3
Aching limbs	12	0	0
Backache	5	0	0
Chill	7	0	1
Pyrexia	14	0	1
Cervical adenitis	6	0	1
Nasal obstruction	5	3	1
More than 4 handkerchiefs a day‡	4	1	1
Coryza	2	0	2
Sore throat	17	2	2
Cough	1	0	0
Abdominal distension	3	0	0
Diarrhoea	1	0	0
Constipation	1	0	0
Vomiting	2	0	0
Nausea	3	0	0

* Virus recovered from throat or faeces or both.
† Includes those given neutralized virus.
‡ Two volunteers used more than 4 handkerchiefs a day before inoculation but no increase in nasal discharge occurred thereafter.

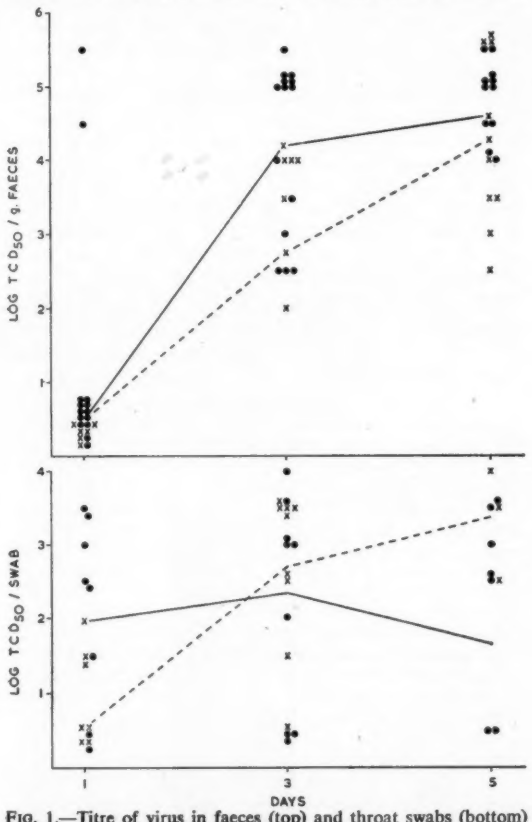

FIG. 1.—Titre of virus in faeces (top) and throat swabs (bottom) of volunteers infected with E.C.H.O. 20 virus. Abscissae indicate the number of days after inoculation. × shows the titre of a specimen from a volunteer infected with throat swab or nasal washing, and × - - - × indicates the mean titre for this group. ● and ×——× are corresponding data for volunteers infected with tissue-culture fluids.

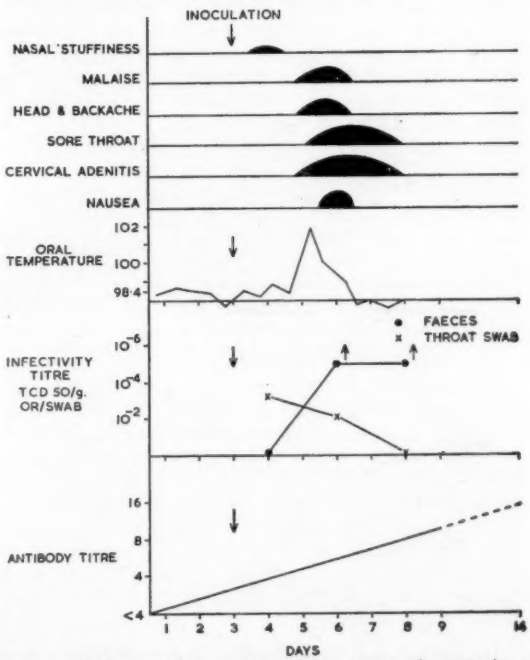

FIG. 2.—Diagrammatic summary of the course of events in a volunteer infected on day 3 with 300,000 TCD_{50} of E.C.H.O. 20 virus passed three times in human embryo lung cultures.

correlates in a graphical form the clinical and laboratory observations on one volunteer who showed a typical response of rather more than average severity.

Thirty-three volunteers were inoculated with Hanks's saline or medium from uninfected cultures of human-embryo-kidney cells. One of these developed a mild cold and six developed mild symptoms, mainly respiratory, at some time after their inoculation; but only two or three of these volunteers would have been regarded as experiencing mild illnesses by the criteria used in evaluating the clinical data on the volunteers receiving E.C.H.O. 20 virus.

However, the volunteers who were inoculated with virus and from whom virus was not recovered had more symptoms than the uninoculated controls and fewer than the virus-infected volunteers. This might have been due either to infection by another virus, which would not multiply in the cultures used, or to infection by E.C.H.O. 20 virus which we failed to detect. We think the latter is the most probable explanation, since most of the illnesses occurred in the experiments in which large doses of partly neutralized virus were given; while, on the other hand, no illnesses occurred in the volunteers inoculated with the mixtures of low-titre throat-washing virus and immune serum.

Discussion

The following conclusions can be provisionally drawn. When material containing E.C.H.O. 20 virus from throat swabs, nasal washings, or tissue culture was given to volunteers, illness as a rule followed and virus multiplication could generally be demonstrated in those that were ill. The illnesses were mainly undifferentiated minor febrile disease with sore throat; coryza occurred rarely.

These results support the view that the illnesses suffered by some of the children in the U.S.A. from whom the viruses were isolated (see Cramblett *et al.*, 1958) were probably due to E.C.H.O. 20 virus. The general results of these studies may be compared with those obtained using Coe virus and E.C.H.O. 11 in similar experiments. E.C.H.O. 20 produced illness rather less often than did these viruses and the clinical picture was different. In Coe virus infections general symptoms with fever were quite common, but coryza occurred in every case. In E.C.H.O. 11 virus infections coryza was not seen, but sore throat occurred and abdominal symptoms were quite common.

Summary

Forty-three human volunteers living in isolation were inoculated with E.C.H.O. 20 virus as nasal washings or tissue-culture fluids. Twenty-seven volunteers became ill. The main symptoms and signs observed were headache, malaise, aching limbs, sore throat, and fever. Two volunteers showed a syndrome resembling the common cold and eight had abdominal symptoms. Virus was readily found in the throat and faeces of most volunteers, and antibody responses fourfold or greater occurred in 20 out of 25 volunteers from whom virus was recovered.

We thank Miss J. B. Macdonald for help with the clinical observations and Miss P. K. Pearce for technical assistance. The experiments would have been impossible without the willing help of the volunteers, to whom we are grateful.

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ACUTE DIVERTICULITIS

A REVIEW OF EMERGENCY ADMISSIONS

BY

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This paper is based on 138 cases of diverticulitis admitted as emergencies to a general hospital for acute cases over a recent two-year period. The diagnosis was confirmed in every case by operation, barium enema, sigmoidoscopy, or necropsy—often by a combination of these methods. "Diverticulitis" is a general term including a range of conditions that are defined below.

Incidence

In a series of 116 consecutive necropsies in patients over the age of 40 the colon was examined specifically for diverticulitis. This gives the absolute incidence of the condition. Of the 116, 14 (12%) showed the presence of diverticulitis. This incidence compares with that of other series (Edwards, 1954; Aird, 1957), but is greater than that of Wakeley (1936). In men, 6 out of 68 necropsies showed diverticulitis in the colon (9%), and in women 8 out of 48 (17%). The absolute incidence rose with age: in the 60–69 decade 3 out of 26 showed diverticulitis (12%), in the 70–79 decade 3 out of 16 (19%), in the 80–89 decade 4 out of 16 (25%), and in the over-90's 3 out of 3 (100%).

The relative age incidence of the 138 clinical cases is shown in Fig. 1. It can be seen that the highest number of cases is in the 70–79 age-group. None occurred below the age of 40.

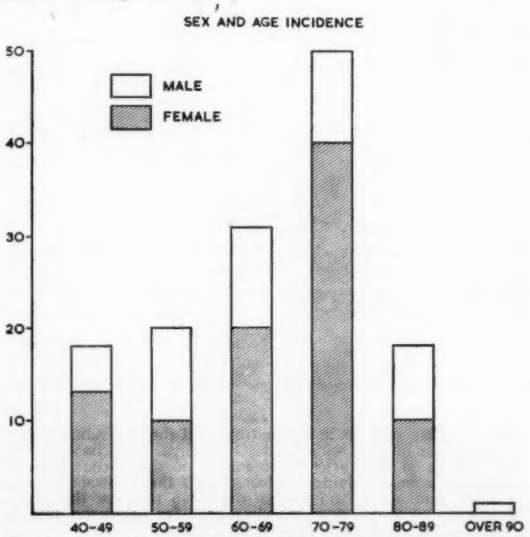

FIG. 1.—Age and sex incidence in 138 cases of acute diverticulitis.

The sex incidence is almost identical in the clinical series and in the necropsy series. Of the 138 clinical cases, 93 were female and 45 male, a preponderance of 2 to 1 in favour of women. This sex incidence appears to have changed during the last decade (Todd, 1955).

Diverticulitis is an acquired disease, and a disease of old age, especially of women.

Pathology

The site of the disease in the colon was studied in 100 consecutive cases in which barium-enema examination showed diverticulitis. The results are given in Table I. It can be seen that the sigmoid or pelvic colon

TABLE I.—*Site of Disease in* 100 *Cases in which Barium Enema Showed Diverticulitis*

Sigmoid colon	62	89
,, and descending colon	17	
,, descending, and transverse colon	4	
,, and transverse colon	2	
,, ,, ascending ,,	2	
,, transverse, and ascending colon	2	
Descending colon	3	
,, and transverse colon	1	
Ascending ,, ,, ,,	1	
,, colon	1	
Whole colon	5	

is involved mainly or entirely in 89% of cases. It is suggested that the pathological state of the sigmoid colon is the underlying cause of the disease.

The traditional account of diverticulitis describes four successive pathological stages — the prediverticular, diverticulosis, diverticulitis, and perforation (Aird, 1957). However, this seems to be an oversimplification and does not explain all the clinical features. The prediverticular stage is of special interest and holds the secret of the beginnings of the condition, although it has received less attention than the other stages.

In order to understand the pathology more fully, the complete colon was examined and dissected at necropsy in 10 cases showing diverticulitis. The following findings are felt to be significant:

1. The typical colon bearing diverticula shows excessive fat deposited in the mesentery and the appendices, covering the bowel itself, often burying it and the diverticula. This fat may contribute to the formation of diverticula (Illingworth and Dick, 1956).

2. There is striking narrowing of the sigmoid colon, which appears tubular and stenosed (Fig. 2). The wall of this segment of the colon is considerably thickened. Histological slides were made of this thickened muscle wall, showing that its whole width consists of increased muscle tissue; the wall of the diverticulum is mucosa only, supported by a thin layer of fibrous tissue (Fig. 3).

3. The diverticula occur in characteristic arrangement. Primary diverticula occur in pairs, related to the site where the arteries pierce the muscle layers adjacent to the appendices, just on the mesenteric side of the two anti-mesenteric taeniae. This agrees closely with the conclusions of Edwards (1954). This is a constant arrangement in most cases, but in some, secondary diverticula form at intervening sites. The degree of stenosis is related to the extent of diverticulum formation; the diverticula are of the pulsion type, and as the mucosa prolapses through deficiencies in the muscle layer the wall of the bowel between adjacent taeniae is taken up and stenosis results or is made worse. This can be likened to a windlass mechanism.

4. There is an abrupt transition between the sigmoid colon which is the seat of diverticulitis and the more normal bowel proximally, although this proximal bowel may show the presence of diverticula (Fig. 4). On the mucosal aspect of the bowel the normal proximal mucosa contrasts with the oedematous and congested mucosa of the sigmoid; on the serosal aspect the haustrations of the normal proximal segment give way to close bands of circular spasm in the sigmoid. This zone of transition can usually be seen clearly in barium studies (Fig. 5).

5. The diverticula occur in sets of two or more opposite each other on the same circumference of the bowel, separated by bands of circular constriction. Thus pairs of primary diverticula form a "ladder" pattern when seen from the lumen, and when viewed from the serosal aspect narrow bands of circular spasm alternate with expansions bearing the diverticula.

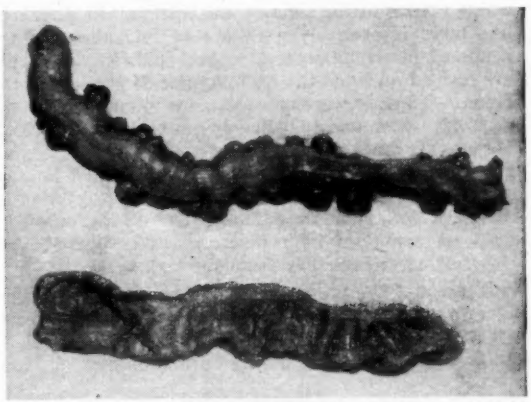

FIG. 2.—Specimen above shows typical narrowing of sigmoid colon which is the seat of diverticulitis, and is compared with a normal sigmoid colon, below. Both are fresh necropsy specimens.

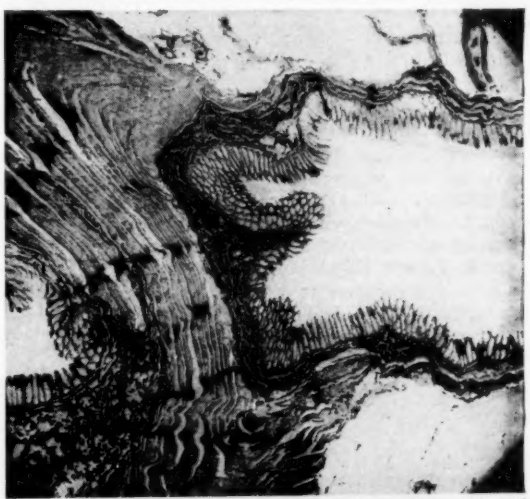

FIG. 3.—High-power view showing that thickened sigmoid wall on left is due mainly to hypertrophied muscle. Wall of diverticulum on right consists of mucosa and fibrous tissue only.

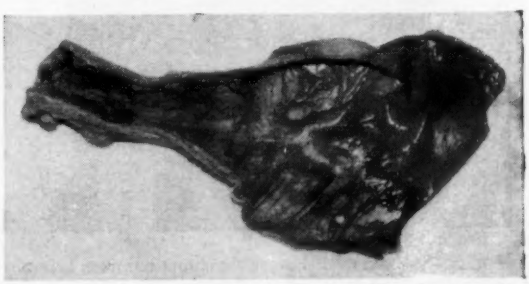

FIG. 4.—Specimen showing abrupt transition between the thickened sigmoid wall with its oedematous and congestive mucosa which is the seat of diverticulitis (left) and the normal colonic wall (right).

The theory is advanced that the clinical condition called diverticulitis is caused initially by a condition of spasm of the sigmoid colon. This spasm may be intermittent or persistent, and may be brought on by various influences—dietary indiscretion, allergy, or infection, for example. This condition of spasm is also segmental and limited to the sigmoid colon, especially the distal sigmoid and rectosigmoid region. It may be related to the function of the colon, inasmuch as this lower sigmoid segment normally forms a type of sphincter which relaxes at the time of defaecation. In diverticulitis there is probably a failure of relaxation. As a result of persisting sigmoid spasm, pulsion diverticula are formed owing to the resulting rise of pressure in the colon. These diverticula are most numerous in the sigmoid, where the persisting spasm squeezes them out. However, diverticula also occur in the proximal colon; the ileocaecal valve is most efficient, and when sigmoid spasm leads to distal obstruction the whole of the intervening colon is a closed loop, and as the pressure rises or continues high diverticula form proximally, progressing retrogradely from the sigmoid.

There are therefore two pathological stages in the disease: (1) Spasm of the sigmoid colon and rectosigmoid area. This is the so-called "prediverticular" stage, illustrated in Fig. 6. (2) Formation of diverticula.

Clinical Studies

In the disease termed diverticulitis there are two clinical syndromes, corresponding to the pathological stages.

Spastic Colon.—Sigmoid spasm leads to symptoms of altered bowel habit—constipation, diarrhoea, or both. Commonly there is persisting or recurrent pain in the left iliac fossa, with tenderness on palpation. The rigid sigmoid can often be felt in the early stages and is tender. Sigmoidoscopy and necropsy examination of the sigmoid mucosa in diverticulitis reveals oedema, congestion, and granular areas that bleed easily on touch. Rectal bleeding is a common symptom of the condition, the blood being bright red and mixed with the faeces; it may frequently be copious. In all the cases and specimens studied here, bleeding from a diverticulum or diverticular opening has been encountered on only one occasion. In this case a giant diverticulum was found to be bleeding copiously and the haemorrhage was arrested by diverticulectomy. Apart from a rare occurrence such as this, the rectal bleeding in diverticulitis originates from the inflamed mucosa present in the spastic segment of sigmoid. The main underlying feature of diverticulitis is thus sigmoiditis (Todd, 1955). Finally, the sigmoid or rectosigmoid spasm may lead to obstruction. In most cases the episode of obstruction responds to conservative measures.

Leaking from Diverticula.—The diverticula are formed by unsupported mucosa and are very apt to leak or perforate, especially in the sigmoid colon, where the state of spasm causes persisting high pressure. Usually the perforations are small, and may be so minute that they may not be found at operation. In four cases in this series a generalized faecal peritonitis was found at operation in the presence of diverticulitis without the actual site of perforation being discovered.

Diverticular perforation may take two forms: (*a*) generalized faecal peritonitis, which in elderly patients is a highly lethal condition; and (*b*) a small leak from a diverticulum which becomes sealed off, forming a pericolic abscess: as the leak is fed by faecal material issuing from a sigmoid in spasm (the spasm made worse by the perforation), the process of suppuration progresses and tends to infiltrate along soft-tissue planes and into adjacent viscera—bladder, small intestine, and adjacent loops of colon. Internal fistulae result characteristically. Fig. 7 illustrates the manner in which leaking diverticulitis may infiltrate into adjacent tissues. Commonly, intestinal obstruction supervenes, due to paralytic ileus associated with intraperitoneal pus or to involvement of small intestine. This type of obstruction demands urgent operation.

Clinical Groups

All the 138 cases of diverticulitis studied were admitted as emergency cases. In the great majority of these patients symptoms were of recent development, a matter of days or weeks. Symptoms had been present for longer than three months in only 14 cases, and previous episodes of diverticulitis lasting more than three months had occurred in only five. Thus in 119 of the patients the disease was of recent onset.

FIG. 5

FIG. 6

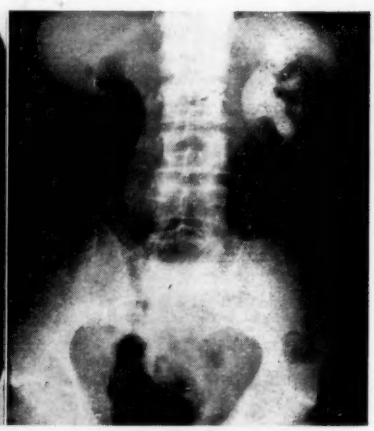

FIG. 7

FIG. 5.—Barium enema showing the abrupt transition between the sigmoid colon, which is the seat of diverticulitis, and the descending colon, which is normal although it shows some diverticular formation. FIG. 6.—Typical "saw-edged" appearance of the prediverticular stage of diverticulitis. FIG. 7.—Intravenous pyelogram in case of vesical calculi, showing a non-functioning kidney on right. Diverticulitis of the sigmoid colon was present; this had infiltrated into the lower end of the right ureter and filled the right kidney with air.

Patients discharged after treatment did not develop recurring symptoms. Diverticulitis is usually regarded as a persisting, recurring, and progressive condition, but study of these patients shows it to take the form of short-lived acute episodes that do not recur if the patient survives.

Analysis of the cases shows that they fall into five clinical groups (Table II).

TABLE II.—*Clinical Groups*

	No. of Cases	No. of Deaths
1. Altered bowel habit	25	
2. Rectal bleeding	16	
3. "Acute diverticulitis"	46	1
4. Obstruction	16	2
5. Perforation or fistula	35	13
	138	16

Group 1. Altered Bowel Habit, Often Accompanied by Abdominal Colic (25 cases).—Diarrhoea was the presenting symptom in 14 cases, constipation in 8, and alternating diarrhoea and constipation in 3. The high incidence of constipation is unexpected but interesting, and compatible with the idea of persistent colonic spasm.

Group 2: Rectal Bleeding (16 cases).—The bleeding was often profuse and blood transfusion was necessary in six of these patients. In one case, quoted previously, bleeding was from a large diverticulum in the pelvic colon, and excision of this diverticulum resulted in successful termination of the haemorrhage. In the other cases sigmoidoscopy showed the bleeding to originate from the mucosa of the sigmoid or recto-sigmoid.

Group 3: Acute Pain, Tenderness, and Rigidity in the Left Iliac Fossa (46 cases).—Acute pain of a continuous type in the left iliac fossa was the predominant symptom in 26 cases, diarrhoea was present in 9, and rectal bleeding occurred in 4. Central abdominal colic affected 25 patients, and constipation was marked in 7, alternating with diarrhoea in 1. Pain on defaecation combined with dysuria affected 4 patients.

Group 4: Intestinal Obstruction (16 cases).—Abdominal distension was the most marked feature in all these patients, together with vomiting. Colic was also present in each case, but constipation was rarely complete. The obstruction was complete or acute in only three, necessitating operation. In the other 13 cases the obstruction proved to be partial or subacute, and responded to conservative measures, including gastric aspiration, intravenous transfusion, antibiotics, and sedatives.

Group 5: Perforated Diverticulitis (35 cases).—Perforation led to generalized peritonitis in 23 cases, and localized leaking with abscess formation in 9. In three cases there was fistula formation—two vesico-colic and one vagino-colic. Operation was performed in 22 of these patients; and in most of the remainder it was not possible on account of the desperate general condition and of age. The great majority of the deaths occurred in this group.

Management of these 138 cases came under two headings, conservative and operative.

Conservative Treatment

Patients in the first four groups (103 cases) were for the most part treated conservatively in the first place. It is thought that these groups represent the first stage of the disease—namely, sigmoid and recto-sigmoid spasm—and that this is the principal pathological factor causing alteration in bowel habit, rectal bleeding, pain in the left iliac fossa, and subacute obstruction. The main points in conservative management were as follows:

Chemotherapy.—Most of the common anticoliform antibiotics—chloramphenicol, streptomycin, and tetracycline—were used with effect in short courses. The sulphonamides were also used successfully in many cases, both the absorbable ones such as sulphadimidine and the insoluble members such as succinylsulphathiazole, especially in the presence of diarrhoea.

Sedatives.—Morphine or its derivatives were used in most cases, although theoretically they might be expected to increase the underlying state of spasm.

Neuromuscular Relaxants.—Pethidine was used in most cases in groups 1 and 3 and is probably the drug of choice when colic is present. "Trasentin" is also a very useful drug, but was employed in only a few cases in this series. Propantheline also merits wider trial in this group.

Blood transfusion was necessary in many of the group-2 cases, both for acute bleeding and for chronic anaemia. In some cases repeated transfusions were needed.

Gastric aspiration and *parenteral fluids* were given in all group-4 cases, and in the majority the intestinal obstruction settled on this regime.

The results of conservative treatment are excellent in the great majority of cases. This experience accords with that of Brown and Toomey (1960). There were no deaths in the patients of groups 1–4 where conservative management was deliberate. Eight deaths occurred in group-5 patients (perforated diverticulitis) treated conservatively, but in all these the conservative regime was obligatory; operation would have been carried out had the patients been fit enough.

Operative Treatment

Thirty-four cases underwent surgery, including 22 in group 5. The following operations were carried out:

Laparotomy (10 cases).—This served to confirm the diagnosis and extent of the disease in doubtful cases. In some, adhesions were separated and appendicectomy was performed. There was one death.

Diverticulectomy.—For bleeding diverticulum in one case (see above).

Incision of a central abdominal abscess (1 case), followed by a faecal fistula which slowly closed.

Colostomy—with or without laparotomy (15 cases).—Five of these patients died. In 5 of the 10 survivors the colostomy was subsequently closed after an interval of months, as follows—18, 11, 6, 3¼, and 2. The last-mentioned patient died of a leaking colostomy. Before closure, barium enema is of value to show the condition of the distal loop and ensure an adequate lumen.

Resection of a localized segment of diverticulitis with anastomosis (7 cases).—All these patients survived. In view of the pathology described, it is important to resect the complete colonic segment which is the seat of spasm. This usually means the sigmoid colon, which appears tubular and contracted with a thickened wall. It is not important to excise all the colon bearing diverticula. However, only few of the over-70 age-group are fit to withstand a major resection for a non-malignant condition (Bolt, 1960).

In some cases of perforated diverticulitis the sigmoid colon bearing the perforation can be exteriorized and excised, leaving a double-barrelled colostomy that can be closed at a second stage.

Among the group of 34 patients undergoing operation 7 (21%) died. In three patients in this group pelvic abscesses drained conservatively without operation: two discharged spontaneously—one per rectum and one per vaginam—and the third was drained through a sigmoidoscope. These three survived.

Mortality.—Among the 138 patients in this series 16 died as a result of the disease or its complications, an overall mortality of 11.6%. Of these deaths 13 occurred in the 35 patients of group 5 (37%). Only 5 of these followed operation; the remaining eight were never fit for operation.

Conclusions

The condition known as diverticulitis includes two separate syndromes: spasticity of the sigmoid colon and perforated diverticulitis. In the first, management should be conservative in the first place (Reid, 1951); the syndrome takes the form of an acute episode, often without past history, that settles in the great majority of cases.

Perforated diverticulitis is a highly lethal condition, particularly when it affects the elderly and chronic sick. In those who are severely ill and in poor medical condition, simple colostomy and drainage should be attempted where possible, with subsequent closure after an adequate healing period (McCollum, 1959). Those patients who will stand a major operation are best treated by resection and anastomosis; it is important to resect the whole sigmoid colon which shows tubular change and spasm. Occasionally a perforated sigmoid loop can be exteriorized in the Paul–Mikulicz manner.

I thank all my surgical colleagues at Dudley Road Hospital for allowing me to use their cases. My grateful thanks are also due to Dr. J. L. Cole and the radiological department for help with the radiological studies; and to Dr. A. E. Chaplin and the pathological department for help with the pathological studies. Fig. 7 was provided for me by Dr. C. I. Griffiths from a case of Mr. F. R. Hurford. I thank Mr. J. G. Williamson for producing the figures and Mrs. M. K. Mason for help with the manuscript.

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"The Domiciliary Midwifery Service of the University College Hospital of the West Indies was established in 1956 with the aid of a grant from the Rockefeller Foundation. The reasons for its development were: (1) To provide practical experience for medical students in the home care of obstetrical patients and to give them some knowledge of the social circumstances of these women and their families. (2) To aid research on the social and economic circumstances of Jamaican patients, by provision of a social research worker. (3) To increase the hospital's service to the community and to provide necessary experience for pupil midwives. The domiciliary team is made up of a sister-in-charge and two or three staff midwives. They have the use of two vehicles and a staff of four drivers on shift duty throughout the day and night. The patients for home delivery are selected at the antenatal 'booking clinics' which are conducted by the sister in charge of the domiciliary service. About 100 women attend each week hoping to obtain bookings for hospital confinement. Some patients are selected for hospital delivery on medical grounds. Others who seem suitable for home delivery and are willing to accept this service are booked provisionally for this and home visits are arranged. A patient is not finally booked until her home has been assessed and found to be suitable. About one-third of homes are found to be unsuitable. Medical students under supervision conduct about 30% of the home deliveries, and since March, 1958, pupil midwives also worked with the service. Students and pupil midwives assist with the assessment of patients' homes and attend antenatal and puerperal home visits whenever possible." (*West Indian med. J.*, March, 1960.)

POLIOMYELITIS IMMUNIZATION IN INFANTS IN THE PRESENCE OF MATERNALLY TRANSMITTED ANTIBODY

BY

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It has been shown in previous studies (Perkins, Yetts, and Gaisford, 1958, 1959b) that the usual primary immunization schedule of two doses of poliomyelitis vaccine given at an interval of four weeks produced an unsatisfactory antibody response in newborn infants. The majority of the infants tested showed no rise in type 1 antibody level, and, although at the time it was not clear whether the high levels of placentally transmitted antibody present in most infants were inhibiting or simply masking the primary response, it was later shown (Perkins *et al.*, 1959a), on giving a third dose, that sensitization had not been achieved by the primary course in those infants having high levels of antibody initially.

In further studies (Perkins *et al.*, 1959b, 1959c) a number of infants aged 4, 6, and 9 months were immunized with three doses of vaccine at monthly intervals and their antibody responses tested after the second and third injections. It was found that three doses of vaccine gave much higher antibody responses than two doses, and it therefore seemed logical to try to overcome the interfering effect of maternal antibody in the newborn by providing an increased antigenic stimulus. Accordingly, a group of infants were given three doses of vaccine at 1, 5, and 9 weeks of age, each dose being 2 ml., divided between two inoculation sites. The results showed that infants with low maternal antibody responded better to this schedule than to the two-dose schedule previously used; but again in most of those infants with high levels of maternal antibody it was not possible to decide whether their responses were being masked or inhibited.

The present paper provides details of the responses to a booster dose given 12 to 16 months after primary immunization with three doses of poliomyelitis vaccine in three groups of infants who were (*a*) 1 week, (*b*) 4 months, (*c*) 6 or 9 months of age at the beginning of the primary course.

Procedures

Immunization of Infants.—Blood samples were taken from the infants at the time of giving the booster dose and 10 to 14 days later. All infants were given a booster dose of 1 ml. of the same batch of Pfizer poliomyelitis vaccine prepared from the Brunenders (type 1), MEF-1 (type 2), and Saukett (type 3) strains.

Titration of Sera.—Poliomyelitis antibody levels to each of the three virus types were determined by the method previously described (Biological Standards

Control Laboratory, 1957; Perkins, Sousa, and Tobin, 1958). The post-primary immunization serum samples were titrated in parallel with the pre- and post-booster serum samples in order that a valid comparison of antibody levels could be made. All titres are given as the dilution of serum in the serum–virus mixtures before the addition to cell cultures.

Response of Infants to a Booster Dose of Poliomyelitis Vaccine

A. Infants Given Primary Immunization at Age of 1 Week

Of the 45 infants who were given their primary course starting at 1 week (Perkins *et al.*, 1959b), 30 remained in the study. It was clear from the high antibody levels of the pre-booster sera that in five of these infants intercurrent infection had occurred—two to type 1, two to type 2, and one to type 3. The responses of these five infants to the booster dose were high, especially to the infecting type, and they were therefore excluded from the study, together with three others from whom insufficient serum was obtained. There remained 22 infants, whose responses to the three virus types after receiving the booster dose are shown in Fig. 1.

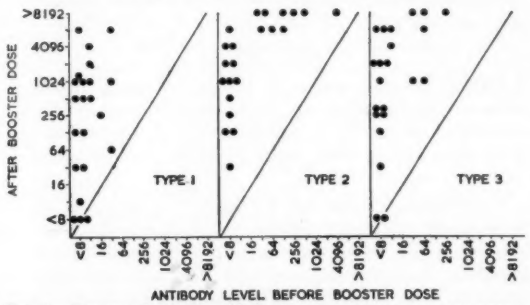

FIG. 1.—Booster responses of infants who were 1 week old at time of giving the first dose of vaccine.

The pre-boost antibody levels were lowest for type 1, no infant having a titre of more than 32, and many having no detectable antibody at all. Clearly the primary response must have been poor for the antibody to have fallen to such low levels during the intervening period of 15 months. For type 2 there was a distinct separation between 13 infants with undetectable antibody levels and nine with titres from 32 to as high as 4,096. It is interesting that six of the nine infants with high antibody levels were born with low levels of maternal antibodies and all had shown excellent responses to primary immunization, whereas of the 13 with low antibody levels 11 were born with high maternal antibodies and showed no apparent response to the primary course. This was also true for type 3, for five of the six infants with titres of 32 or more showed a primary response, whereas 9 of the 16 with low antibody levels had shown no apparent primary response.

In spite of the low levels of antibody in many of the infants before the booster dose was given, the majority of them produced a good booster response to all three virus types. Titres of 32 or more were shown by all except four for type 1, all for type 2, and all except three for type 3.

B. Infants Given Primary Immunization at Age of 4 Months

Of the 55 infants given three doses of vaccine during primary immunization starting at 4 months of age, 40 remained in the study. In 17 of these infants the antibody level in the pre-boost serum sample was greater than that in the post-primary immunization sample to at least one type—three to type 1, nine to type 2, and five to type 3. These infants were thus excluded from the study together with one additional infant from whom insufficient serum was obtained. There remained 22 infants, whose responses to the three virus types after receiving a booster dose are shown in Fig. 2.

Because of their age at the time of primary immunization, many more than in the previous group had non-inhibitory maternal antibody levels when the primary doses were given. It is of particular interest that the infants with pre-boost antibody titres of 32 or more had non-inhibitory maternal antibody levels at the time of primary immunization, and all had given a primary response. On the other hand, all those with pre-boost antibody titres of less than 32 had, at the time of primary immunization, shown either no apparent response above the maternal antibody level or only a low response.

All except one infant gave booster responses to all three virus types, and even this one exception, who did not respond to type 1, already had an antibody level of 128. Although response to type 1 was not so good as that to types 2 and 3, the majority of infants nevertheless gave good antibody levels. The responses to type 2 were excellent, all infants having titres of 1,024 or more, and that to type 3 was almost as good, all infants having titres of 256 or more.

C. Infants Given Primary Immunization at Age of 6 or 9 Months

Of the 29 infants given three doses of vaccine in their primary immunization course starting at 6 or 9 months of age, 24 remained in the study. The antibody level to one of the virus types in the pre-boost serum was greater than that in the post-primary immunization sample in three infants—one to each type. These three infants, together with two others from whom the full

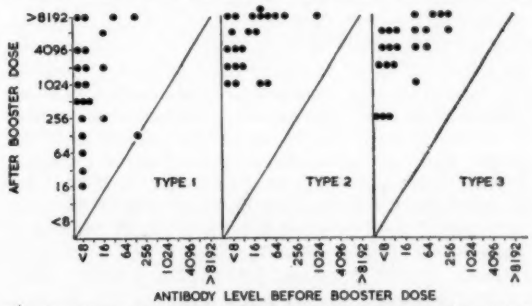

FIG. 2.—Booster responses of infants who were 4 months old at time of giving the first dose of vaccine.

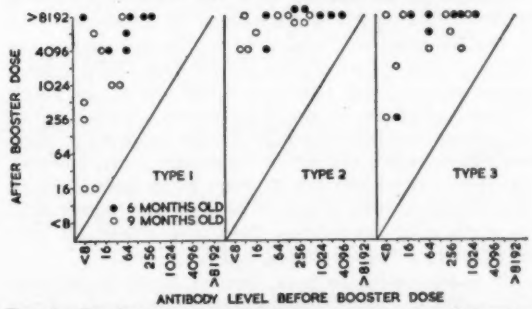

FIG. 3.—Booster responses of infants who were 6 or 9 months old at time of giving the first dose of vaccine.

series of serum samples was not obtained, were excluded, as were three infants who were also excluded from the original study because they had an inapparent infection before primary immunization. This left 16 infants in the study—seven were 6 months old and nine were 9 months—and their antibody levels for all three virus types before and after a booster dose are shown in Fig. 3.

At the time of primary immunization of these infants the maternal antibody had fallen to non-inhibitory levels and all had responded to the three-dose vaccine schedule. There were, therefore, only a few infants with undetectable antibody at the time the booster dose was given—four to type 1, none to type 2, and two to type 3.

The booster responses to all three types were excellent except in the case of two infants who responded poorly to type 1. Apart from these two, all showed titres of 256 or more, and the majority titres of 4,000 or more. There is an indication, especially from the type 1 and 3 results, that the 6-months-old infants responded somewhat better than the 9-months-old. A similar finding was obtained at the time of primary immunization, and it is probably due to the fact that the 6- and 9-months-old infants received different batches of vaccine for the primary course and that the batch given to the 6-months-old group was antigenically the more potent.

Discussion

In all these studies our ultimate objective has been to immunize infants at the earliest possible age. On theoretical grounds the newborn period is the most appropriate time to start, but, until we can show that with suitable antigens it is possible for satisfactory responses to follow at this early age, it cannot be advocated for general use. Our studies began after a Medical Research Council (1956) report had shown that the incidence of provoked paralysis was increased by combined prophylactics, and we hoped that by immunizing against poliomyelitis in the first three months of life the combined antigens might safely be given thereafter. Unfortunately, the inhibitory effect of maternally transmitted antibody has been until now a considerable deterrent to starting poliomyelitis immunization in the newborn period. However, in this present series the results with the infants who were given three doses of vaccine starting at 1 week of age and a booster dose a year later are so encouraging that primary immunization in the newborn period must be considered a practical possibility. There is still some evidence that high levels of maternal antibody inhibit response, for, although many more infants responded to the three doses in the primary course than was apparent at the time, the poorer responses to the booster dose were almost always in those infants born with high maternal antibody.

The importance of giving to the newborn three and not two doses of vaccine as the primary course cannot be overemphasized. In our earlier study, in which 1-week-old infants were given two doses, only 5 out of 22 infants responded to type 1 after the booster dose, the highest titre being 32. In the present study, however, in which 1-week-old infants were given three doses in the primary course, 18 out of 22 gave type 1 titres of 32 or more after the booster dose, and almost all gave satisfactory titres to types 2 and 3.

It is interesting to note that, in those infants who responded to primary immunization and who retained some of their antibody for 12 to 16 months, the response to the booster dose was much greater than that given by infants whose antibody had fallen to undetectable levels. This raises the question of the optimal time at which to give the booster dose, and consideration should be given to the effect of decreasing the interval between primary immunization and the booster dose.

As was to be expected, the booster responses in the groups of infants who received their primary immunization at 4 months or older were decidedly better than in the 1-week-old group. It is debatable, however, in view of the promising results with the 1-week-old group, whether there would be any advantage in delaying the start of immunization until after 1 week. It is more important that immunization should start as early in infancy as possible, and, since the increased antigenic stimulus as a result of giving three doses has undoubtedly been responsible for overcoming much of the inhibitory effect on maternal antibody, it is highly probable that more potent vaccines, especially in the type 1 component, will have an even greater effect in breaking down maternal antibody inhibition. With this in view, studies have already been started, using purified vaccines of higher antigenic potency (Hilleman *et al.*, 1960) than those which we have used so far.

Summary

Infants given a primary course of three doses of poliomyelitis vaccine at 1, 5, and 9 weeks of age responded better to a booster dose 12 to 16 months later than those who received only two doses as a primary course.

This finding shows that inhibition of the response to vaccine by maternal antibody can be overcome by increasing the antigenic stimulus, and it is therefore probable that the use of concentrated vaccines to increase it still further will result in an even more successful breakdown of maternal antibody inhibition.

Our thanks are due to Dr. G. V. Feldman, Dr. R. F. Jennison, and the nursing and laboratory staff at St. Mary's Maternity Hospital, Manchester, for their assistance, and to Miss P. Tumber and Mrs. B. Mitchell for their help in titrating sera. We also thank the Ministry of Health for the supply of poliomyelitis vaccine. This work was supported in part by a grant from the National Fund for Poliomyelitis Research to the Department of Child Health, Manchester University, for which we are most grateful.

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Copies of the *French Bibliographical Digest: Pediatrics*, by Maurice Lamy, have been distributed to universities and libraries in this country. The *Digest* confines itself to French publications issued before 1955, and includes the names of French paediatric periodicals and paediatric societies. The bibliography is arranged in 15 sections and there is an index of authors. The *Digest* is edited and published by the Cultural Center of the French Embassy, 972 Fifth Avenue, New York 21, N.Y., U.S.A.

ACUTE BULBAR POLIOMYELITIS IN LATE PREGNANCY

BY

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Acute bulbar poliomyelitis occurring in a pregnant woman at or near term is rare in this country. There are a number of reports of the complication in the foreign literature, but none in the British, and therefore a description of the event in a patient who, at her death, was delivered of a living child by caesarean section should be of interest. This tells of the difficulties of diagnosis and management encountered when the contingency arose, and of measures taken to prevent the development of the disease in the offspring.

Case Report

A gravida-eight-plus-one aged 42 was accepted as an emergency admission at 4 p.m. on August 17, 1959. The expected date of confinement was August 24. Antenatal progress had been uneventful. There had been seven normal confinements between 1939 and 1951, and one spontaneous miscarriage in 1945, and she had always been healthy and free from allergy. She had been well until she ate some meat pie three days previously, when she developed diarrhoea and vomiting, which had almost ceased by the time of her admission. Her husband also ate the pie and suffered similar symptoms. She had noticed a tight feeling in her throat since the previous night and difficulty in breathing, gradually becoming worse.

On her admission the temperature was 96.2° F. (35.7° C.), pulse 120, respirations 30, and blood-pressure 120/70. She was rather obese, cyanosed, and distressed, and she felt more comfortable sitting up. The heart was normal, the lungs were clear, and breathing was shallow, apart from an occasional deep inspiration involving the accessory muscles of respiration. A radiograph showed the left hemidiaphragm to be elevated, but no other abnormality. The reflexes were brisk and plantar responses normal. There was, however, some difficulty in swallowing. The superficial veins in both legs showed marked varicosity but no evidence of thrombosis.

The uterus was enlarged to correspond with a term pregnancy. A single foetus was present, the head presenting and engaged in the right occipito-anterior position. The foetal heart was regular at 140 beats a minute.

Laboratory Studies.—Urine: S.G. 1020; albumin and acetone present, and a trace of sugar. Blood urea, 50 mg./100 ml.; serum electrolytes—sodium 145 mEq/l., potassium 4 mEq/l., chloride 101 mEq/l.; CO_2 combining power 16.2 mEq/l.; C.S.F.—330 polymorphs/c.mm.; protein, 60 mg./100 ml.; globulin, slight excess; chlorides, 740 mg./100 ml.; sugar, 100 mg./100 ml.; Lange curve, 0011110000; culture sterile. E.C.G. showed no abnormal features.

The patient was propped up in bed and given oxygen by the B.L.B. mask and an intravenous infusion of 5% dextrose. Two hours after admission low rupture of the membranes was performed without anaesthesia. The condition deteriorated in the next two hours. The breathing became irregular, and at 8.45 p.m., four and three-quarter hours after admission, she vomited, became cyanosed, and her heart stopped beating. Intermittent positive-pressure respiration was initiated through a face-mask connected to a Boyle machine. The left chest was opened and the heart massaged through the intact pericardium and then through a pericardial incision. Without further delay a classical caesarean section was performed and an apparently healthy living female infant was delivered. Meanwhile an endotracheal tube had been passed and artificial respiration continued, together with cardiac massage. There were no spontaneous myocardial contractions. Adrenaline solution, 0.5 mg. of 1 in 1,000, was injected into the ventricular muscles without avail. Efforts to revive the patient were abandoned at 10.30 p.m., one and three-quarter hours after the heart had ceased to beat spontaneously.

Necropsy Findings.—Face cyanosed. Larynx, trachea, and bronchi congested. Lungs: all lobes congested and partially collapsed. Myocardium and valves normal, coronary vessels patent. Alimentary system—no abnormality seen. Uterus—muscle healthy and well contracted, with incision due to caesarean section. C.N.S.—slight generalized swelling of the brain. *Histology.*—Lesions typical of acute poliomyelitis were identified in the medulla, and in cervical and thoracic portions of the spinal cord. Type 1 virus was grown from the faeces and from sections of the intestinal canal and the spinal cord.

Progress of the Infant

The newborn female infant, who weighed 5 lb. 11 oz. (2,580 g.), was transferred at once to the isolation hospital, as it was thought that the mother's illness might be acute poliomyelitis. She had cried on delivery. The respirations, at first shallow, irregular, and mainly abdominal, and about 70 a minute, gradually became regular and abdominothoracic. The rate declined to 42 a minute in eight hours. The heart rate was 168 a minute at birth but fell to 125 in the same period. The temperature was 98.4° F. (36.9° C.). Muscle tone was good and the central nervous system was clinically normal.

On August 18, 21 hours after birth, the infant was given 500 mg. of gamma-globulin intramuscularly. Specimens of stool were sent for virus culture on the fifth day of life (August 22) and at weekly intervals thereafter. Poliomyelitis type 1 was isolated from the first specimen submitted and the stools did not finally become negative for the virus until the thirteenth week of life.

The infant's progress was satisfactory. She took feeds well, gained weight steadily, and did not show any disturbance of temperature or clinical sign of poliomyelitis during the 15½ weeks under observation in hospital.

Results of the serological tests against the three types of virus are shown in the Table.

Table Showing Initial Low Antibody Titre of Infant's Serum Against all Three Types of Poliovirus, and Rise in Titre Against Type 1 Virus, the Infecting Organism

Serum Date of Specimen	Age of Infant Weeks	Neutralizing Antibody Titre Against Poliomyelitis Virus		
		Type 1	Type 2	Type 3
August 24, 1959 ..	1	1/16	1/256	1/32
November 12, 1959	12	1/1,024	1/16	1/8
January 6, 1960 ..	20	1/512	1/16	<1/8
February 3, 1960 ..	24	1/1,024	<1/8	Insufficient
March 18, 1960 ..	31	1/2,048	1/256	1/64

The rise in antibody titre for all three types on March 18 was due to active immunization with Salk-type vaccine ("polimylex," Burroughs Wellcome), at 25 and at 29 weeks of age.

Discussion

Most authorities believe that pregnancy predisposes to poliomyelitis (Bates, 1955; Rindge, 1957). Whether the disease is more common in certain trimesters is doubtful.

Bergquist and Sadler (1955) are of the opinion that patients in the third trimester are more likely to be affected than those in the first and second trimesters, while Siegel and Greenberg (1955) found that most paralytic cases among pregnant women had their onset between the third and fifth months of gestation with a secondary rise in the last two. They also concluded that pregnant women with large families are more likely to contract the infection than those with small families, presumably because the former may be exposed to a greater mass or circulation of poliovirus within the family circle.

When infection does occur during pregnancy, the end-result may be abortion, stillbirth, or a healthy infant who may or may not develop the disease in the neonatal period. In Aycock's (1941) series, for instance, of 56 cases of paralytic poliomyelitis in pregnancy 26 normal infants were born and remained healthy, 4 appeared to develop symptoms of poliomyelitis in the neonatal period, and 14 died or were stillborn. In 12 there is no note regarding the outcome.

The nearer to term the infection is contracted the greater the danger to the mother and her offspring (Abramson *et al.*, 1953; Bates, 1955; Bergquist and Sadler, 1955). At this stage of pregnancy the bulbar type of the disease is especially common, and in most cases is rapidly progressive. It begins with general malaise, nausea, and vomiting, followed by increasing muscle-weakness and respiratory embarrassment. Often the diaphragm and muscles of the lower two-thirds of the chest are paralysed and there may be quadriplegia as well. The maternal mortality is high, and death of the foetus is inevitable unless labour has begun and proceeds to its termination without complications, or unless rapid and successful caesarean section is performed. Section is imperative when breathing becomes affected, and in this event tracheotomy and some form of mechanical aid to respiration are mandatory.

In a few cases the infant has been delivered by section coincident with or immediately after the death of the mother. Swarts and Kercher (1954) reported the case of an infant delivered by section within five minutes of the death of the mother from undiagnosed poliomyelitis. The newborn baby developed signs of paralysis on the 10th day and died on the 12th. Type 1 was isolated from the infant's and the mother's spinal cord. Winsser *et al.* (1957) cite four additional cases in which caesarean section was performed just before or just after the mother had died from bulbar poliomyelitis. Two of the newborn infants developed the disease and two remained healthy. Rindge (1957) mentions two infants delivered by post-mortem caesarean section in her series of 79 pregnant women with poliomyelitis. One was stillborn and the other died in 10 hours.

Poliomyelitis is relatively uncommon in infants under 1 year of age, and is still more uncommon under 6 months, owing to passive immunity acquired by transplacental transmission of maternal antibody. Infants born to women acutely ill with poliomyelitis are naturally deficient in protective antibody, so that the great majority of them contract the disease within the first three weeks of life and the fatality rate is high.

The present report concerns an infant, delivered by section on the death of the mother, who thrived and did not develop paralysis, but must have been infected by the mother, because she passed type 1 virus in her stools from at least the fifth day for the next 12 or so weeks, the same virus having been isolated from the maternal stools and tissues taken at necropsy.

There has been much discussion on whether newborns developing poliomyelitis have done so as a result of viraemic transmission *in utero* or because of imbibition of infected material during delivery. In a small number of cases the evidence put forward that viraemic infection of the foetus has occurred is highly suggestive (Kreibich and Wolf, 1950; Shelokov and Weinstein, 1951; Abramson *et al.*, 1953; Schaeffer *et al.*, 1954; Bates, 1955; Barsky and Beale, 1957; Winsser *et al.*, 1957). The incubation period of poliomyelitis is between the approximate limits of 5 to 25 days, so that Winsser's contention that there is virtually no other explanation than intrauterine infection in the few that become paralysed within the first two or three days of life seems reasonable. However, in most of the reported cases of neonatal poliomyelitis the paralysis has developed later, towards the end of the second or in the third week, a time lapse that favours the oral route of infection at the time of birth.

We did not collect blood for poliovirus culture from our infant when she was born. The presence of type 1 virus in her stools five days after birth suggests that her infection was acquired orally, but whether *in utero* or during delivery is a matter of conjecture. The initial low serological titres of neutralizing antibody against all three types of poliovirus reflect the lack of protection afforded by the mother before her death, and the subsequent rise in type 1 antibody is marked and in contrast to the standstill in the antibody titres to types 2 and 3 (see Table). In similar circumstances in the future it might be informative if virus studies of the placenta and of the blood and stools of the newborn were made from the day of birth.

The administration of gamma-globulin to the infant on the first day of life may have protected the nervous system during the blood-borne phase of the infection. As can be seen from the rise in the titre of neutralizing antibody against type 1 virus (see Table), the administration did not interfere with the process of silent active immunization against the virus. In this connexion it may be recalled that Koprowski *et al.* (1956) have shown that active immunization can be induced in older children given immune serum globulin at the same time as virus by mouth. However, the real answer to the problem of poliomyelitis in pregnancy is prophylaxis; for, as has been demonstrated by Strean *et al.* (1957), successful vaccination of the prospective mother will protect the newborn during the first four months of life because adequate amounts of maternal antibody are transmitted to the foetus as a result of the procedure.

Summary

This report describes the last hours of a pregnant woman who contracted poliomyelitis near term, and the delivery of a living child by caesarean section at the time of her death.

Gamma-globulin was administered to the newborn infant on the first day of life. On the fifth day and for 12 weeks thereafter poliovirus type 1 was isolated from the stools. The infant at no time showed clinical signs of the disease.

Some of the facts and the factors concerning poliomyelitis in pregnancy and in the neonate are briefly discussed, and reference is made to the appropriate literature.

We thank Mr. R. W. Knowlton, under whose care the patient was admitted, for permission to publish this case.

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Medical Memoranda

Omental Endometriosis

The following case is recorded because involvement of the omentum by endometriosis is apparently rare.

CASE HISTORY

The patient, aged 24, did not begin to menstruate until the age of 19, although from the age of 14 she suffered some monthly pain. At the time of admission to hospital (September 21, 1959) the cycle was irregular, every 21–35 days, with a moderate loss from 2 to 14 days. Dysmenorrhoea began two days before the onset of the menstrual flow and persisted until the loss ceased. Pain was sufficient to keep her awake. She had been married for two years, and, although anxious to conceive, had not done so. There was no dyspareunia.

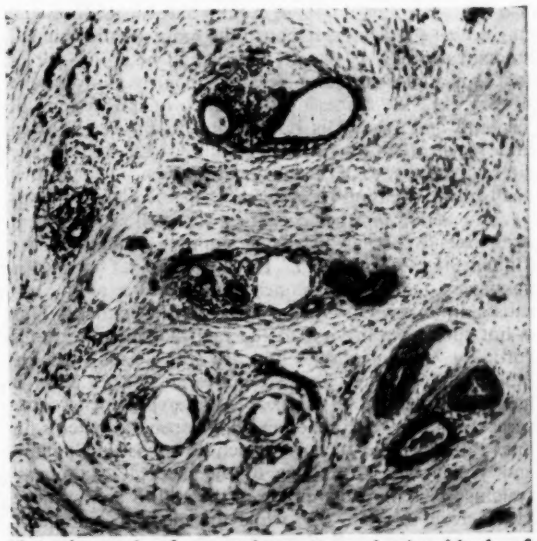
On examination the patient's general condition and development were normal. Abdominal examination revealed no abnormality. The lower genital tract was healthy, but the cervix was small and apparently almost buried in the vault. The uterus was axial and of normal size. There was a left-sided tender fixed adnexal swelling the size of a walnut.

Examination under anaesthesia and laparotomy were undertaken on September 24 by Mr. John Beattie. Upon opening the abdomen a tongue of omentum was found adherent in the depths of the pelvis. When this was separated the extremity of the omentum was seen to contain an area, approximately 1 cm. in diameter, of a different texture and with a homogeneous grey cut surface. This area was removed for biopsy. The left ovary contained a cyst of chocolate appearance measuring 2.5 cm. in diameter, and was adherent to the back of the broad ligament. The right ovary was similarly adherent but of normal size, although the typical black "peacock's eye" spots of endometriosis were present. The fallopian tubes appeared normal and patent to retrograde insufflation. Left ovarian cystectomy, with the removal of other "spots" of endometriosis, and presacral neurectomy were carried out. Convalescence was uneventful.

Pathology.—Section of the removed omentum (see Fig.) showed islands of endometriosis in the form of proliferative phase glands and stroma among typical adipose tissue. Tissue from the left ovary showed a cyst containing blood and lined by fibrous tissue. An innermost layer of columnar epithelium was composed of cells with darkly staining nuclei; similar tubular projections extended into the stroma. The interstitial portion of the wall of the cyst also contained endometrial tubules and pseudoxanthoma cells.

COMMENT

This case of endometriosis involving the greater omentum raises the question of why such findings are not more frequent. The "abdominal policeman" is a frequent bystander at any infective process within the pelvis, particularly if this is relatively subacute, and will sometimes respond as well to the slow leak of blood from a tubal abortion. Many diverse sites for endometriosis have been described by Novak and Novak (1958), but the omentum is omitted. They emphasize the occurrence of endometrial islands on any part of the peritoneum as being characteristically below the pelvic brim and correspondingly rare in abdominal viscera at a higher level. The appendix and small intestine constitute the occasional exceptions, probably owing to their frequent attendance in the pelvis.



Photomicrograph of removed omentum, showing islands of endometriosis.

It is possible that in the above case the tag of omentum was primarily attached in the pelvis after some episode for which history is lacking, and was secondarily involved in the endometriomatous disease process.

The primary condition might have been the rupture of a small endometrial cyst, yet the reason the omentum does not more frequently attempt localization of the irritant process of endometriosis is curious.

I am grateful to Mr. John Beattie for encouragement and permission to publish this case.

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REFERENCE

Novak, E., and Novak, E. R. (1958). *Gynecologic and Obstetric Pathology*, 4th ed. Saunders, Philadelphia.

A leaflet about smoking and lung cancer believed to be particularly suitable for the intelligent teenager has been written for the Chest and Heart Association by Dr. J. L. BURN, medical officer of health, Salford, Lancashire. Specimen copies of the leaflet, *Smoking—a Message from an M.O.H.*, will be sent free to anyone interested. Additional copies may be bought from the C.H.A. (Tavistock House North, Tavistock Square, London W.C.1) at 2d. a copy, or 15s. a hundred.

Reviews

CORONERS AND CRIME

The Detection of Secret Homicide. A Study of the Medico-legal System of Investigations of Sudden and Unexplained Deaths. By J. D. J. Havard, M.A., LL.B., M.B., B.Chir. (Pp. 253+xv. 35s.) London: Macmillan and Co., Ltd. New York: St. Martin's Press. 1960.

The title of this book is somewhat misleading and might well act as a deterrent to the more serious minded student, doctor, or lawyer. This would be a pity, for in fact it is a most remarkable and scholarly study of the history and development of the coroners' system in England and Wales, its relationship to the certification and registration of stillbirths and deaths, and to the subsequent disposal of the dead bodies. The author also draws attention to systems of medico-legal investigation existing in other countries, especially the medical examiners' system which is in popular demand in the United States of America. He rightly points out in this connexion that its acceptance is mostly due to the unsatisfactory coroners' system still in existence there. This is not surprising in view of the fact that in some states coroners without qualification are still elected. On the other hand, as any change requires state legislation, it has been found more practicable and expedient in some cases to modify the already existing coroners' systems on lines rather similar to those which now exist in England and Wales than to change to the medical examiners' system. This may also prove in the end to be the more satisfactory solution, for, while the medical examiners' system from the medical point of view is more suitable, it has the possible disadvantage of requiring a pathologist to give a legal decision—though admittedly it can be reversed by subsequent court procedure.

In the discussion of the shortcomings of the present coroners' system the author shows that he has carried out a most intensive and critical study of the present state of affairs, and with many of his statements nobody can fail to agree. It is perhaps a pity that he has not drawn more attention to the divided responsibility at present in existence whereby the coroner has administrative control of his court, where it exists, but not of the mortuary and post-mortem room (this is provided by the local authority). This may have the somewhat unsatisfactory result of making the pathologist who carries out the necropsy at the request of the coroner work under conditions which the latter may disapprove. But the coroner is unable to do more than protest to the local authority involved or insist on removal of the body to some more suitable place, which may cause the relatives inconvenience. So, too, there is at present no legal obligation for the authority to provide other than accommodation, and the absence of weighing machines, for example, does not improve the standard of the work.

There is no doubt that many of the problems to which the author draws attention have a substantial basis of fact and that improvements could well be made within the framework of the present system, though legislation would be required. It is of topical interest to decide whether, for example, cremation of a body, provided the present cremation regulations are properly complied with, is more likely to interfere with the detection of certain cases of poisoning than burial and the use of the present death certificate. There may well be disagreement with some of the author's suggestions for reform, and on occasions he may not appear to be completely in touch with the practical aspects, but, as Professor Radzinowicz says in the preface, they are perforce of a controversial nature and will be useful in stimulating discussion. Moreover, his description of the task undertaken by Dr. Havard as arduous is no understatement, as can be seen from the enormous amount of study it has involved.

This book should be read not only by medical practitioners but also by lawyers and all funeral directors. The author is to be congratulated on a work of academic distinction, and also Professor Radzinowicz and the Institute of Criminology of the University of Cambridge under whose auspices it has been published.

F. E. CAMPS.

HOME ACCIDENTS

A Study of Home Accidents in Aberdeen. An Investigation Financed by the Nuffield Provincial Hospitals Trust. By Ian A. G. Macqueen, M.A., M.D., D.P.H., F.R.S.H. (Pp. 99+viii. 12s. 6d.) Edinburgh and London: E. and S. Livingstone Ltd. 1960.

This is an important publication relating to a carefully conducted investigation into home accidents in Aberdeen between September 1, 1955, and August 31, 1957; it was made possible by a grant from the Nuffield Provincial Hospitals Trust.

Many local surveys of home accidents have been made in the past, but few have been able to give an accurate picture of home morbidity. Dr. Macqueen realized the importance of making adequate preparation before the survey started, and the results certainly justify the amount of preliminary work involved, for it was a remarkable outcome that the proportion of accidents remaining unnotified did not exceed about 5%. More than half of the home accidents in Aberdeen involved children, though these accounted for only one-quarter of the population, and there was a relative infrequency in old people. The author thinks that this may have been due to the intensive home safety campaign before the survey started. The book revealed some points of very great interest which did not confirm experience in other surveys; for instance, home accidents were not found to be commoner in the winter months than in the summer, and a Monday peak in home accidents was to be found in males as well as in females. It was interesting to read, also, that "the younger the youngest child in the household the greater the chances of domestic accidents both to the child itself and to other members of the household." Rather surprisingly, illumination, by daylight and by artificial lighting, was considered unsatisfactory in only a small number of homes. The highly polished floor, as always, remained the real menace to home safety. Perhaps the least convincing chapter in this book was the one relating to accident proneness; this, of course, is difficult to prove, but, after careful study of the results, the author maintains that it does appear to exist in certain families.

This is a well-presented book, with clear diagrams and tables. The index is adequate, and the two appendices which show the questionaries that were used are very useful. It is a book which is valuable in itself, which is easy to read, and which will prove of great encouragement to others who want to make similar studies. There is no doubt that we are ignorant of the morbidity of home accidents, and any carefully prepared

survey such as has been made in Aberdeen will add greatly to our knowledge. Dr. Macqueen and his health visitors are to be congratulated on the excellence of their study and on the interest of this book.

C. A. BOUCHER.

ANAEROBIC BACTERIA

Anaerobic Bacteriology in Clinical Medicine. By A. Trevor Willis, Ph.D.(Leeds), M.B., B.S.(Melb.). (Pp. 163+xii; illustrated. 30s.) London: Butterworth and Co. (Publishers) Ltd. 1960.

Largely because the cultivation of anaerobes on solid media requires hydrogen and an apparatus which exhibits alarming tendencies to explode, and because the colonies when grown are so seldom distinctive that a long series of subcultivations are generally necessary before it is certain that the organisms are, in fact, anaerobes, with still more tests to come before they can be identified, it is perhaps not very surprising that most bacteriologists avoid anaerobic cultivation whenever possible. These inherent difficulties will probably never be eliminated, but this little book by Dr. Willis will at least give him guidance on the best methods of overcoming them.

These methods are discussed at length in the first chapter. This is followed by two chapters dealing with the most suitable media and the methods of identification that should be employed. The characteristics of each species are given in Chapter 4, while the remaining chapters deal with the various forms of anaerobic infection and the toxins produced by the organisms. An adequate, but by no means exhaustive, bibliography is also included.

Principally because of the intensive study they have received, the main emphasis of the book is on the *Clostridia*—so much so that the casual reader might justifiably assume that these are the only anaerobes that matter. But the clinical pathologist is much less likely to encounter gas gangrene, tetanus, and botulism than actinomycosis, necrobacillosis, and anaerobic coccal infection. Moreover, much more is known about the organisms responsible for these three forms of infection than would appear from a perusal of Dr. Willis's book. Its value would accordingly have been greatly increased had these organisms received fuller treatment. Despite this, the book will undoubtedly be of value to the clinical pathologist who has to find his way about in a still largely unknown section of bacteriology.

R. HARE.

DISK LESIONS

Disc Lesions and Other Intervertebral Derangements. Treated by Manipulation, Traction and other Conservative Methods. By E. J. Crisp, M.D.(Cantab.), D.Phys.Med.(Lond.). (Pp. 158+viii; illustrated. 15s.) Edinburgh and London: E. and S. Livingstone, Ltd. 1960.

This is a short and unpretentious book, attractively set out. The author modestly disclaims originality for his exegesis and has written an interesting summary of present-day opinions on internal derangement at the spinal joints. The first four chapters are devoted to a clear description of anatomy, including congenital deviation from the usual bony pattern. He then discusses briefly each different lesion that various authorities have put forward as apt to cause pain. Since the author is well known for espousing a nipped synovial fringe at a lateral facet joint as a common cause of symptoms at the neck and lower back, it is disappointing to find that the evidence for this occurrence rests in the bare statement, "nowadays it is generally recognized . . ." No physical signs are described to differentiate this phenomenon from a disk lesion, but he considers that the history provides criteria. Diagnostic epidural local anaesthesia—and, for that matter, therapeutic — is not mentioned. Manipulation in lumbago due to a disk lesion is condemned. This is orthodox and understandable, since four of the author's six lumbar manipulations are indeed unsuited to this disorder. Nevertheless, perpetuation of the traditional passive attitude towards this common affliction lays the medical profession wide open to being scored off repeatedly by lay manipulators. The author's hope that cartilage (an avascular structure) will heal during the period of rest in bed appears unduly sanguine. By contrast, when the same lumbar signs are the result of derangement at a facet joint, manipulation and traction are warmly advocated.

Chapters follow on chronic backache, sciatic and femoral neuritis, the thoracic and cervical joints, and the brachial and cervical plexuses. Indications are set out for recumbency, support, traction, and manipulation, and the final chapter deals with traction and manipulative techniques.

The assumption throughout this book is that the reader knows how to examine the region under consideration and is aware of the significance of all such deviations from the normal as are revealed by careful clinical study. But those with an intimate knowledge of spinal disorders are among the least likely readers of this synopsis. It must surely be directed to the young doctor who wants to learn his way about the many patients with this sort of trouble whom he sees on his daily rounds. Much more detail on the clinical examination of the patient would enormously increase the merit of the book. It would enable the reader to make diagnoses exact enough to support a clear choice between the various methods of treatment described. The author has assumed knowledge in others far beyond the facts of the situation; he has, in fact, proved too modest.

J. H. CYRIAX.

FACING RETIREMENT

Facing Retirement. A Guide to the Middle Aged and Elderly. By A Country Doctor, M.A., M.D. Foreword by J. W. Robertson Scott, C.H., M.A.(Hon.)Oxon. (Pp. 127. 12s. 6d.) London: George Allen and Unwin, Ltd. 1960.

It is remarkable how often intelligent people who took great pains to prepare for full and successful working lives nevertheless allow themselves to enter upon their later years and retirement without forethought or specific preparation. Some imagine that instinct will tell them what to do, though this is certainly not the case; yet formal courses of instruction are lacking, and there are few books to which they could turn. Here is something which admirably fills that gap, a short work which could sooner or later be read with profit by all sensible men and women, from whatever walk of life. It is simple and direct in style, positive and informative without being didactic, and it blends philosophy with sound, practical advice.

The author, whose special interest is clear to see, devotes chapters to money matters, pensions and national assistance, to making wills, to food problems, to preservation of the faculties, and other practicalities which older people must face, and face squarely. But he is perhaps at his best when dealing with the human

relationships which are so often the core of the problem. Thus there are admirable short chapters on living alone, on friendly visiting, and on "The Elderly Guest," which points the way to the peaceful coexistence of elderly with younger people. Pearls of medical wisdom are to be found in many places, and there is one avowed medical chapter in which a few conditions of the heart and blood vessels are touched upon, and cancer is put into proper perspective—all in simple language. If there is any fault to find, it is that a little more might have been said about the dangers of physical and mental inactivity and of going unnecessarily to bed, and more might have been made of the need for positive steps to promote health by self-discipline and the adoption of sound habits, for, whereas reasonable health is often left to chance by the young, it has to be striven for by the old. The entire book is permeated with the author's deeply felt respect and concern for those of whom he writes, yet is quite without taint of sentimentality. The cover claims that this would be an ideal gift for anyone in the fifties or sixties. The claim is too modest: it would be ideal reading for all younger people who are blessed, or think themselves burdened, with the care of older people, and certainly for all doctors and nurses.

J. N. AGATE.

DRUGS OF CHOICE

Drugs of Choice, 1960–1961. Edited by Walter Modell, M.D. (Pp. 958; illustrated. £5 1s. 6d.) St. Louis: C. V. Mosby Company. London: Henry Kimpton. 1960.

The second edition of this large and well-produced collaborative work, involving forty-seven American contributors, seeks to supply the physician with information about the drug of choice for each therapeutic problem which may confront him. Each of the forty-two chapters contains a short description of the clinical condition for which the drugs under consideration are used, an account of the drugs commonly employed in its treatment, and some discussion on which of them is most desirable. At the end of every chapter there is a selected list of references, almost entirely confined to the American literature, and the book ends with an all-inclusive drug index. It is always difficult to obtain uniformity of presentation in a work with so many contributors, and in this book, though many chapters are very good, others are indifferent. There are some curious omissions: there is no mention of myasthenia gravis, for instance, for the treatment of which there are surely some drugs of choice.

In the field of treatment, which is undergoing such rapid changes, it is doubtful whether most doctors in Great Britain will wish to possess, in addition to an up-to-date text on pharmacology and another on therapeutics, a large and expensive work which is something between the two. For this volume makes no pretensions to being a textbook on pharmacology, and therapeutics surely implies much more than the prescription of drugs: the treatment of diabetes, for example, involves a great deal besides the administration of a suitable insulin or sulphonylurea; indeed, over 40% of diabetics require no drugs at all. A physician's therapeutic responsibility in a case of peptic ulcer is not liquidated by the prescription of alkalis, belladonna, and sedatives; and there is more in the treatment of rheumatoid arthritis than aspirin, corticosteroids, and gold. Dietetics, physiotherapy, technical procedures, rest, and exercise are not considered in this book, which is entirely confined to the choice of drugs. Thus, even the treatment of these conditions in which drugs are of great importance can hardly be dealt with adequately by the method adopted, and there are still many other disorders, in which drugs are of little or no value, for the management of which this volume will be found almost entirely worthless.

DERRICK DUNLOP.

ADAPTATION AND CONFLICT

Man's Presumptuous Brain. An Evolutionary Interpretation of Psychosomatic Disease. By A. T. W. Simeons, M.D. (Pp. 281+xii; illustrated. 25s.) London: Longmans. 1960.

This intriguing book, written for the intelligent layman as well as for the medical reader, has been favourably noticed both by Julian Huxley and by Bertrand Russell. It is the product of a lively, original, and immensely cultivated mind. The author is an expert in tropical medicine who has more recently interested himself in psychosomatic diseases. His thesis is that such disorders, which are peculiar to man and to domesticated or captive animals, are the somatic manifestations of a disharmony which is at once cerebral and cultural. To the author they express in essence the ever-intensified conflict between man's rational and his animal nature—between hypertrophied cortex and primitive diencephalon. The infinitely slow adaptive methods by which nature resolved the many similar developmental conflicts which arose during the aeons of prehistory have been outstripped by the headlong pace of a civilization which is itself a consequence of cortical hegemony.

Such a bald statement does scant justice to the ingenuity of the author's arguments. What is novel in this presentation is its evolutionary orientation, and the first 80 pages of the book afford a fascinating panorama of the development of man. The remainder of the work deals with the application of the author's theories to a variety of psychosomatic disorders. Much of this is frankly speculative, and none the worse for that—contemporary medicine needs new ideas even more than it needs new facts. Dr. Simeons lays about him with a will on a variety of clinical subjects, and the reader's delight at his wit and perspicacity alternates with exasperation at his occasionally doctrinaire wrongheadedness. But in general he is clearly on the side of the angels, and scatters stimulating ideas on almost every page. He has written a most provocative and entertaining book.

HENRY MILLER.

CALCIUM METABOLISM

Calcium Metabolism and the Bone. By Paul Fourman, M.D., D.Sc., F.R.C.P. (Pp. 325. 37s. 6d.) Oxford: Blackwell Scientific Publications. 1960.

This is a useful and scholarly work of reference, filling a real gap of many years in the medical literature. It deals first in detail with the structure of bone, then describes the metabolism and transport of calcium and phosphorus; the first section of the book concludes with a chapter on the role of the parathyroid glands. From here on the chapters deal in turn with the main medical disorders of calcium, phosphorus, and bone. There are good chapters on osteoporosis, primary hyperparathyroidism, and the various forms of rickets and osteomalacia.

The book gives us an interim report on a rapidly advancing subject. It has necessarily to be sketchy in places, as, for instance, on pp. 105–6, where the author

seems reluctant to discuss osteoporosis following large doses of corticosteroids. Those more clinically oriented will regret the absence of any reproduction of *x*-ray appearances and of diagrams whereby complicated metabolic situations may be more simply described. An elaboration along these lines would have greatly increased the cost of the book, which remains good value at this price.

C. E. DENT.

TUMOURS OF THE NERVOUS SYSTEM

Pathology of Tumours of the Nervous System. By Dorothy S. Russell, Sc.D., M.A., M.D., F.R.C.P., LL.D., and L. J. Rubinstein, M.D. With a chapter on Tissue Culture in Relation to Tumours of the Nervous System, by C. E. Lumsden, M.D. (Pp. 318; illustrated. 70s.) London: Edward Arnold (Publishers) Ltd. 1959.

For the general pathologist this book is likely to remain the standard work on the subject for many years to come. While authoritative and comprehensive, it is concise, simply and clearly written, gives a balanced selection of old and recent references, American and German as well as British, and is illustrated by plentiful, well-chosen, and beautifully reproduced photographs, mainly photomicrographs. On controversial points—for example, the existence of true ganglioneuromas and neuroblastomas of the central nervous system, and of mixed gliomatous and sarcomatous tumours—opposing views are fairly presented, and the authors' own opinions are clearly stated. The concluding chapter, on the culture of normal and neoplastic nervous tissues, by Professor C. E. Lumsden, is an excellent review of this subject. The book has a good index, is notably free of misprints, and is beautifully produced. Every general pathologist, as well as every neuropathologist, should have it.

RUPERT A. WILLIS.

BOOKS RECEIVED

Review is not precluded by notice here of books recently received.

Congenital Deformities. By Gavin C. Gordon, M.B., F.R.C.S.E. (Pp. 127+vii; illustrated. 37s. 6d.) Edinburgh and London: E. and S. Livingstone, Ltd. 1961.

Clinical Applications of Cardiopulmonary Physiology. By M. Henry Williams, jun., M.D. (Pp. 233+x; illustrated. $7.50.) New York: Paul B. Hoeber, Inc. 1960.

Surgical Treatment of Trauma. Edited by Preston A. Wade, M.D. (Pp. 779+xii; illustrated. $26.50.) New York and London: Grune and Stratton. 1960.

Strahlenschutz in Klinik und Ärztlicher Praxis. By Professor Dr. med. Werner Lorenz. (Pp. 259+xi; illustrated. DM. 59.40.) Stuttgart: Georg Thieme Verlag. 1961.

Die Chirurgie des Nervus facialis. By Professor Dr. med. Adolf Miehlke. (Pp. 208+x; illustrated. DM. 98.) Munich and Berlin: Urban and Schwarzenburg. 1960.

Welfare in America. By Vaughn Davis Bornet. (Pp. 319+xi; illustrated. $4.95.) Norman, Oklahoma: University of Oklahoma Press Publishing Division. 1960.

Biologie der Gallenfarbstoffe. By Dr. Torben K. With. (Pp. 377+xii. DM. 59.) Stuttgart: Georg Thieme Verlag. 1960.

Introduction to Dental Anatomy. By James Henderson Scott, D.Sc., M.D., L.D.S., and Norman Barrington Bray Symons, M.Sc., B.D.S. 3rd edition. (Pp. 388+xi; illustrated. 45s.) Edinburgh and London: E. and S. Livingstone, Ltd. 1961.

Re-educative Treatment of Suppression Amblyopia. Being an abridged English version of Jean Sédan's *Post Cure de l'Amblyope Rééduqué.* By T. Keith Lyle, C.B.E., M.D., M.Ch., M.R.C.P., F.R.C.S., Cynthia Douthwaite, D.B.O., and Jill Wilkinson, D.B.O. (Pp. 135+xii; illustrated. 25s.) Edinburgh and London: E. and S. Livingstone, Ltd. 1960.

Dentistry for the Pre-school Child. By G. N. Davies, D.D.S. (N.Z.), and Richard M. King, B.D.S.(N.Z.), M.S.(Univ. of Mich.). (Pp. 268+vii; illustrated. 32s. 6d.) Edinburgh and London: E. and S. Livingstone Ltd. 1960.

Injuries of the Brain and Spinal Cord and their Coverings. Edited by Samuel Brock. (Pp. 739+xi; illustrated. £7.) London: Cassell. 1960.

Primitive Physic. By John Wesley. With an Introduction by A. Wesley Hill. (Pp. 127. 12s. 6d.) London: The Epworth Press. 1960.

Cancer in Childhood and Youth. By Sigismund Peller, M.D., F.R.S.H. (Pp. 291+xii; illustrated. 42s.) Bristol: John Wright and Sons Ltd. 1960.

The Institute of Actuaries Year Book 1960-1961. (Pp. 355+xv. 5s.) Cambridge: Published on behalf of the Institute of Actuaries at the University Press. 1960.

Die bedrohlichen Erkrankungen und Verletzungen des Auges. By Professor Dr. med. Karl Hruby. (Pp. 139+xi; illustrated. DM. 19.) Munich and Berlin: Urban and Schwarzenberg. 1961.

Premier Colloque International sur les Mycobactéries. 4, 5 et 6 Décembre, 1959 (organisé avec l'aide du Ministère de l'instruction Publique). Edited by P. G. Janssens. (Pp. 198. No price.) Anvers: Institut de Médecine Tropicale. 1960.

Surgery of the Acute Abdomen. By John A. Shepherd, V.R.D., M.D., Ch.M.(St.And.), F.R.C.S.Ed., F.R.C.S.Eng., Q.H.S. Foreword by Sir Zachary Cope, M.D., M.S., F.R.C.S. (Pp. 1,228+x; illustrated. £5.) Edinburgh and London: E. and S. Livingstone Ltd. 1960.

Arthritis and Allied Conditions. A Textbook of Rheumatology. Editor Joseph Lee Hollander, M.D. Sixth edition. (Pp. 1,306; illustrated. £7 10s.) London: Henry Kimpton. 1960.

Resuscitation of the Newborn Infant. Principles and Practice. Edited by Harold Abramson, M.D. (Pp. 274; illustrated. 75s.) St. Louis: C. V. Mosby Co. London: Henry Kimpton. 1960.

Fundamentals of Nerve Blocking. By Vincent J. Collins, M.S., M.D. With the Assistance of Emery Andrew Rovenstine, M.D. (Pp. 354; illustrated. 71s. 6d.) London: Henry Kimpton. 1960.

Proceedings of the Third International Congress on Medical Records. Assembly Rooms, Edinburgh, 27th to 29th April, 1960. Edited by Elsie Royle Mansell, F.M.R., and Norman V. Jackson, A.M.R. (Pp. 350. No price.) Edinburgh and London: E. and S. Livingstone Ltd. 1960.

Radioactivation Analysis. Proceedings of the Radioactivation Analysis Symposium held in Vienna, Austria, June, 1959. (Pp. 141. 30s.) London: Butterworths. 1960.

The Psychogenesis of Mental Disease. By C. G. Jung. Translated by R. F. C. Hull. (Pp. 312+viii. 32s.) London: Routledge and Kegan Paul. 1960.

The Chemistry of Nucleic Acids. By D. O. Jordan. (Pp. 358+ix; illustrated. 60s.) London: Butterworths. 1960.

Transactions of the Medical Society of London. Volume 76. Edited by Cuthbert E. Dukes, O.B.E., M.Sc., M.D., F.R.C.S. (Pp. 189+lxii. No price.) London: F. J. Milner and Sons Ltd. 1960.

Pathology of Tumours. By R. A. Willis, D.Sc., M.D., F.R.C.P. Third edition. (Pp. 1001+xvi+56; illustrated. £5 5s.) London: Butterworths. 1960.

Modern Trends in Cardiology. Edited by A. Morgan Jones, M.Sc., M.B., F.R.C.P. (Pp. 264+ix+13; illustrated. 70s.) London: Butterworths. 1960.

Lumbar Discography and Low Back Pain. By Donald deForest Bauer, M.D., C.M., M.Sc. (Pp. 89+x; illustrated. 40s.) Springfield, Illinois: Charles C. Thomas. Oxford: Blackwell Scientific Publications Ltd. 1960.

The Ethical Dilemma of Science and Other Writings. By A. V. Hill. (Pp. 395+xiii. 52s.) New York: Rockefeller Institute Press. London: Oxford University Press. 1960.

Documenta Ophthalmologica. Advances in Ophthalmology. Volume XIV. Edited by G. von Bahr, G. B. Bietti, J. ten Doesschate, H. Fischer-von-Bünau, J. François, H. Goldmann, K. K. Müller, Jean Nordmann, A. J. Schaeffer, Arnold Sorsby. (Pp. 413; illustrated. 72 guilders.) The Hague: Uitgeverij Dr. W. Junk. 1960.

Medical History, Humanism and the Student of Medicine. By Henry R. Viets, M.D. (Pp. 32; illustrated. $3.) Hanover, New Hampshire: Dartmouth Publications. 1960.

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THE COMMONWEALTH IDEAL

The Commonwealth countries, and New Zealand in particular, were this week made more conscious than ever before of the high quality of their contributions to British medicine. On Monday this week a distinguished New Zealander who has made his home in England inducted as his successor as President of the B.M.A. another New Zealander who elected to stay in his home country and there find time to be both a pre-eminent exponent of the surgical art and a medical statesman moulding the medical services of New Zealand. Both Sir Arthur Porritt, the retiring President, and Sir Douglas Robb, his successor, have shown in a remarkable way that their busy and successful lives as practising surgeons have left them time to look at medicine as a whole, and indeed to look at it with the eye of a reformer. Sir Arthur Porritt's Presidential Address[1] at Torquay last year was refreshingly forthright and provocative, and it was but natural and timely that he should see the British scene in terms of a Commonwealth context. This week in Auckland Sir Douglas Robb took up the same theme with the idea of seeing whether thought could be translated into action.

Last year Sir Douglas Robb travelled through Africa, from the Cape to Cairo, as Sir Arthur Sims Commonwealth Professor, and what he calls "a tremendous experience" has urged him to see how the problems of health and disease could be tackled on "one single Commonwealth basis." In the Commonwealth picture as it is to-day he sees a most uneven distribution of medical service. In some areas "it is quite a struggle for a doctor to get medical work to do"; in others there are human beings in desperate need of service but unable to obtain it. Alongside all this there are what Sir Douglas terms the grossest inequalities in the training of doctors, nurses, and those many other workers whose contributions to the care of the sick are indispensable. He is struck by the paradox that while the United Kingdom was cutting down the number of its students as a result of the Willink Report it was at the same time having to staff so many of its hospitals with graduates from India, New Zealand, and elsewhere in order to keep Britain's State hospitals going. The fact that so many distinguished New Zealand doctors who have settled in England were among the most prominent speakers at the meeting in Auckland this week is an eloquent witness of the benefits we at home have secured from this migration. This may in part have been due to what Sir Douglas has elsewhere[2] described as the neglect of the specialist and consultant service in New Zealand's medical scheme. It may be due in part also to what he considers as "undue attention to medicine as a career for boys and girls who are strong on the science side." These and other forces at work are responsible in New Zealand for "a constant difficulty in attracting good men and a constant leakage to Australia and Britain of our better men." So his own special vantage point in Auckland, backed up by what he has seen on his travels, compels him to look for "an all-embracing medical plan for services, for teaching, and for research over the wide Commonwealth."

The vision is splendid. The difficulties are immense. As pointers to the larger scheme there are such efforts of help and interchange as exist between Great Ormond Street and Makerere College in Uganda, Bristol and East Africa, and the sponsorship by Birmingham University of a new medical school in S. Rhodesia. As Professor Kenneth Hill pointed out in a recent article[3] the Royal Free Hospital School of Medicine is already appointing two lecturers at the same time for a combined lectureship to be held at that hospital and at University College, Ibadan. Professor Hill backs up Sir Douglas's theme in a more detailed fashion, and at the same time shares his vision of the larger picture by looking forward to the day when medical men will be able to move within the Commonwealth on a basis of full reciprocity. And he looks beyond that to the time "when each country will be able to develop its own medical services to a point independent of outside help. Should this happen we should still need the interchange of Commonwealth doctors to provide that stimulus to research and its applications from which Great Britain has already gained such immense benefits. Professor Hill goes further by seeing such full reciprocity occurring between all countries. This is already on foot in the six European countries in the Common Market, and the idea of a free exchange of doctors in all countries has already been mooted in the debates of the World Medical Association. This wider plan will be made possible only in that distant future when the lion shall lie down with the lamb and the separate nations of the world

[1] Porritt, A. E., *Brit. med. J.*, 1960, **1**, 1907.
[2] Robb, G. D., *Canad. med. Ass. J.*, 1960, **82**, 432 and 490.
[3] Hill, K. R., *Brit. med. J.*, 1961, **1**, 117.

cease to be fighting against each other. So at least a start could be made within the Commonwealth and a model be built for others to follow.

Sir Douglas Robb could not have chosen his theme at a more timely moment, because in the week before the Annual Meeting of the B.M.A. and the Biennial Conference of the New Zealand Branch of the B.M.A. his theme was discussed by the Commonwealth Medical Conference. When this was held in 1959 in London it was suggested that the impact of such conferences was diminished to the extent that there was a lack of continuity between one conference and another. The matter was taken up again at the Overseas Conference at the B.M.A.'s meeting in Torquay last year. In the words of the Memorandum submitted to the Conference last week "the urgency of ensuring the close and continuous contact proposed is emphasized by the fact that the governments of several ex-colonial territories which have recently attained political independence have set up their own medical and health services, *often recruited from doctors outside the Commonwealth.*" (Our italics.) The memorandum urges that the ideals, traditions, and standards of British medicine should be preserved throughout those Commonwealth countries of which Britain is proud to be a member. It defines its objects as follows:

"1. The promotion within the British Commonwealth of Nations of the highest standards of practice.

"2. The development of community of interest within the Commonwealth and the preservation of good will.

"3. The encouragement of visiting lecturers and the interchange of medical appointments within the Commonwealth and the circulation of information with regard to such appointments.

"4. The co-ordination of visits by doctors, teachers, and research workers to and from different parts of the Commonwealth.

"5. The exchange of news and information of interest, including the circulation of films and tape-recordings.

"6. The pooling of information relating to the activities and organization of existing national medical associations in the Commonwealth."

Sir Douglas Robb does not underestimate the difficulties of bringing the Commonwealth countries into a real medical commonwealth: he sees the need for the creation of some permanent organization with a suitable centre and secretariat, paying us the compliment in suggesting the B.M.A. Headquarters in London as a possible starting-point for this venture. For this money and men will be needed, though a modest, but what promises to be an effective, start was made in Auckland last week when the Commonwealth Medical Conference proposed the establishment of a Commonwealth Medical Association (see the following leading article and the report at p. 420). So Sir Douglas Robb's vision is beginning to take shape. The present scene cannot be changed overnight. But beginnings have been made, and the experience of those who have made the pioneer efforts in the continent of Africa should be of great help to those who we hope will take up the torch which our new President of the British Medical Association has handed to them.

COMMONWEALTH MEDICAL ASSOCIATION

The formation of a Commonwealth Medical Association was unanimously recommended by the Sixth British Commonwealth Medical Conference which met in Auckland last week. A report of the debate and its conclusions appears at p. 420 in this issue. Sir Douglas Robb's quiet pursuit of his idea of a Commonwealth Medical Association during the past year has been so successful that the Conference took this step before he had delivered his Presidential Address on Monday this week.

The decision of the Conference owes much to the persuasive logic of Professor D. E. C. Mekie, whose wide experience of medical conditions in Commonwealth countries lent authority to what he said. As our report shows, some speakers had doubts about the wisdom of forming yet another association of associations. But a close reading of the adopted recommendations suggests that the change of title, important as it is, does not carry with it a great change in procedure. The meetings of the Conference will continue to be held every two years. The financing of these will be on the same basis as before. No elaborate organization is to be set up. No further increase in expenditure is foreseen, though some would seem to be inevitable. The secretariat as before will continue to be provided by the B.M.A. in London, at least for the time being. It is envisaged that what is now called the Conference may become the Council of the Commonwealth Medical Association—another change in terminology. But these changes make the conception more concise and point to future elaboration. The chief emphasis is on continuity of effort and information in the intervals between the two-yearly assemblies of Commonwealth doctors. The most important step taken to secure this is the Conference's decision to appoint an executive officer. It was unanimously decided to invite Professor Mekie to accept this honorary position. At B.M.A. House he will have at his disposal the resources of the central secretariat and

the special knowledge and experience of the Commonwealth Medical Advisory Bureau and its director, Dr. R. A. Pallister.

All this adds up to a distinct advance in providing continuity of the work of the Conference and especially in forging still closer links between doctors of the newly developing Commonwealth countries. And it makes a small beginning towards the fulfilment of the wider promise Sir Douglas Robb holds out in his Presidential Address, on which we have already commented in the preceding leading article. The Commonwealth Medical Association will come into being only if the proposal is unanimously accepted by the national associations forming the Commonwealth Conference. It has been suggested that the proposed new Association may in some way conflict with the interests of the World Medical Association. We do not share this fear. The World Medical Association is firmly based on a world-wide membership of national medical associations. It has a solid achievement of work behind it and it should benefit still more in the future from the contributions made to its work and development by the proposed Commonwealth Medical Association.

COLDS GALORE

Though one of the commonest sources of morbidity in general practice, and causing about the same number of consultations with the doctor as psychoneuroses,[1] the common cold continues to defy the preventives, cures, and palliatives with which a rheumy-eyed population attacks it. The reasons why this intruder—or group of intruders—in man's respiratory tract manages to resist ejection are gradually becoming clearer as a result of research. Most of it, appropriately enough, has been carried out in Great Britain, but recently G. G. Jackson and his colleagues[2] in Chicago have reviewed some studies in which they used large numbers of student volunteers.

These workers produced colds by giving infected nasal secretion to their volunteers as nasal drops. They found that it needed careful recording and assessment of symptoms to make a reliable diagnosis, and during their analysis they found that some infectious secretions produced colds of a different clinical pattern from others. For example, the colds produced by one secretion had an incubation period of two days, and in 97% typical nasal discharge and obstruction were the chief features; the colds produced by another instillation had an incubation period of less than 24 hours; only in 61% was the clinical picture typical, and in 38% the main features were sore throat, hoarseness, and cough. Jackson and colleagues also found, as others had done,[3] that if secretions were mixed with pooled human gamma-globulin they would no longer produce colds in volunteers. Moreover, volunteers who had recovered from infection with one nasal secretion were almost completely resistant when reinoculated with the same secretion, whereas if they were inoculated with a different secretion they were just as likely to develop colds as other volunteers. The Chicago workers concluded that there was a specific immunity to cold viruses, probably mediated by antibody.

Now a report from Dr. D. A. J. Tyrrell and colleagues at the Common Cold Research Unit (at p. 393 of the *Journal* this week) carries the story a stage further. A year ago these workers reported a new technique by means of which they had cultivated in tissue culture three viruses obtained from human colds.[4] They used human embryo kidney cells and a lower temperature and *p*H than is usual. They now report that they have cultivated a total of 25 viruses. Nine of these viruses were given as drops to volunteers and all produced colds, but so did five washings from which a virus was not recovered; improvements in the techniques of culture will remove this kind of discrepancy. However, they find, as did the American workers, that the colds produced in volunteers by different viruses differ slightly in clinical pattern. The British group have gone further in showing that their viruses also differ from each other in laboratory tests: they attacked different cells in tissue culture and were neutralized differently by animal and human sera. Tyrrell and colleagues also cite studies on one person who was apparently infected with three biologically different viruses in three different natural colds. During two of these infections it was possible to demonstrate the development in the serum of neutralizing antibodies against the corresponding virus, and in one case the antibody was still present over two years later. In a second report (at p. 397) Tyrrell and his colleagues show that infection of volunteers with an E.C.H.O. virus did not usually produce coryza. The infection was, rather, characterized by sore throat, slight rise of temperature, headache, and aching limbs and back.

All this preliminary work will have to be backed up with studies on more patients and a proper serological analysis of the types of virus being cultivated. However, it seems probable that when the story is

[1] Logan, W. P. D., and Cushion, A. A., *Morbidity Statistics from General Practice*, 1958. H.M.S.O., General Register Office.
[2] Jackson, G. G., Dowling, H. F., Anderson, T. O., Riff, L., Saporta, J., and Turck, M., *Ann. intern. Med.*, 1960, **53**, 719.
[3] Tyrrell, D. A. J., Bynoe, M. L., Hitchcock, G., Pereira, H. G., and Andrewes, C. H., *Lancet*, 1960, **1**, 235.
[4] —— and Parsons, R., *ibid.*, 1960, **1**, 239.

fully known we shall find that we have many colds because we are infected with many antigenically different viruses. Therefore, though it is important to find out if an effective specific vaccine can be made, it may be difficult to make one with enough antigens of the right sort to give adequate protection when used in the general population. Factors other than specific antibodies may play a part in the natural mechanism of resistance to these viruses, for there are a few fortunate individuals who never seem to have a cold of any sort. The *p*H or temperature of their nasal mucosa might deviate from the average, and it would be worth while trying to find out if virus multiplication in the nose can be inhibited by this or some other physiological defence mechanism which acts on viruses of all serotypes. The laboratory methods are now available, the volunteers could be found, and the results may enable us to find eventually a logical and effective way of preventing colds.

INFANT DEATHS IN COT

The problem of "cot deaths" has puzzled paediatricians and pathologists for years. The term is applied to cases in which an infant is found dead in its sleeping quarters, having been previously apparently well. A feature of the cases is the paucity of pathological changes discoverable even by experienced pathologists. Formerly these deaths were usually ascribed to asphyxia due to "overlaying" or suffocation by a soft pillow. More recently it has been customary to attribute them to fulminant infection, especially of the respiratory tract. Some evidence can be adduced in support of this, but proof of bacterial or viral infection is not often obtainable. Therefore, though these deaths are often reported after necropsy to have been due to infection, and this is accepted by clinicians and coroners, there can be few pathologists who are fully convinced that it is the true explanation in all, or even in most, cases.

A few years ago A. M. Barrett[1] suggested that "most of the known facts about cot deaths are consistent with the majority being caused by inhalation of vomit or food." This alone has not been generally accepted as the cause of death, because evidence of such inhalation (except as an agonal event) is not often found in cases of cot death. But Barrett further suggested that the death might be due not purely to asphyxia but to shock caused by absorption of milk derivatives into the blood stream from the lungs. A group of investigators has recently carried this conception a stage further. W. E. Parish, A. M. Barrett, and R. R. A. Coombs[2] showed that the introduction of a small amount of cow's milk protein into the respiratory tract of normal guinea-pigs had little effect, but in guinea-pigs sensitized to milk proteins it produced severe anaphylactic reactions and sometimes rapid death. If the guinea-pigs were lightly anaesthetized to simulate sleep, many of the sensitized animals died quietly and their lungs did not show the acute emphysema that is typical of anaphylaxis in guinea-pigs. Similar experiments by these workers and their colleagues[3] with stomach contents from cases of cot death led to similar results, often causing rapid death of anaesthetized sensitized animals, with histopathological changes in the lungs resembling those found in cases of cot death.

A possible relevance of these experiments to the problem of cot deaths is indicated by a study of antibodies to cow's milk proteins in the serum of normal infants by Mavis Gunther and colleagues.[4] It showed that nearly all infants become sensitized to some degree by the proteins of cow's milk, and in some the antibody titre was high. It therefore seems possible that sensitization of some infants may be such as to render them liable to anaphylactic shock if cow's milk enters the lungs; that this might result from inhalation of an amount of milk small enough to be difficult to detect in the lung post-mortem; and that, if inhalation occurred during sleep, pathological changes typical of anaphylaxis might be absent, as in the anaesthetized guinea-pigs. It is perhaps significant that a high incidence of sensitization and of high titres was found in infants between 7 and 97 weeks old and not in the cord blood of newborn infants or in the blood of adults. The majority of cot deaths occur at ages between 3 and 6 months. As a further step towards establishing a connexion between this sensitization and cot deaths it is necessary to discover whether the level of antibody to cow's milk protein is higher in serum from victims of cot death than from other infants. It is satisfactory to note that further investigations are in progress with this in view.

ECLIPSE BURNS

Anyone in Great Britain rising with the sun next Wednesday, February 15, will find, if the clouds allow him, that it is already partially eclipsed by the moon. At Greenwich the maximum phase will be at 7.44 a.m., when nine-tenths of the sun will be covered. Since the hazards of looking at this spectacle are too little known, though recorded from ancient times, they deserve to be publicized. A letter from Mr. M. J. Gilkes and his colleagues at p. 424 of the *Journal* draws attention to this matter, and the illustration accompanying it shows how sun-watching can be made as safe as bird-watching.

In a thorough review of this somewhat recondite subject Sir Stewart Duke-Elder[1] gives about 25 references to the literature and records that Socrates advised that a solar eclipse should be observed only by looking at its reflection in water (a procedure now regarded as unsafe). J. Flynn[2] referred to the dangers of solar eclipses in his study of retinitis caused by

[1] Barrett, A. M., *Recent Advances in Paediatrics*, 1954, 1st edition, edited by D. Gairdner, p. 301, London.
[2] Parish, W. E., Barrett, A. M., and Coombs, R. R. A., *Immunology*, 1960, **3**, 307.
[3] —— —— —— Gunther, M., and Camps, F. E., *Lancet*, 1960, **2**, 1106.
[4] Gunther, M., Aschaffenburg, R., Matthews, R. H., Parish, W. E., and Coombs, R. R. A., *Immunology*, 1960, **3**, 296.

[1] Duke-Elder, Sir S., *Textbook of Ophthalmology*, vol. 6, London, 1954.
[2] Flynn, J., *Med. J. Aust.*, 1942, **2**, 400.
[3] Flynn, J. A. F., *Trans. ophthal. Soc. Aust.*, 1952, **12**, 7.
[4] —— *Med. J. Aust.*, 1960, **1**, 85.
[5] Eccles, J. C., and Flynn, A. J., ibid., 1944, **1**, 339.
[6] Gilkes, M. J., Macpherson, D. G., Osmond, A. H., Thorne, B. T., and Roberts, D. St. C., *Brit. med. J.*, 1959, **2**, 1487.

watching hostile aircraft approaching from the direction of the sun during the second world war. He has subsequently discussed more fully the problems of watching an eclipse,[3 4] and with J. C. Eccles[5] investigated experimentally the types of light and amount of energy from the sun that damage the retina. Duke-Elder reports that the first subjective symptom of retinal damage caused in this way is usually a floating, diffuse cloud, which in 24 hours contracts to a dense scotoma, which may be absolute or relative. This may last "for weeks or months or even permanently." The objective changes seen in the eye initially are due to choroidal congestion and, in the more severe cases, oedema and minute haemorrhages. Later a burnt-out hole may be evident in the worst cases. He considers that the prognosis is very variable, but is probably good if the symptoms, particularly the scotoma, subside during the first month. "Improvement may occur over several months, but in the majority of cases some disability persists." Thus prevention is essential, and the lesson is especially important for children, because experience has shown that they are more likely than adults to damage their eyes in this way.[6]

PAYING FOR THE HEALTH SERVICE

By raising the National Health Service contributions and increasing some of the charges to patients, Mr. Enoch Powell proposes to reduce the Exchequer's contribution to the cost of the N.H.S. by some £50m. in the coming year, and £65m. in a full year. The total cost of the Service in the current year will be in the region of £867m., of which the Exchequer's share will be £663m. The gross cost this year is about 8% more than last year, and last year's cost was 6% more than the year before that. The estimates for next year are likely to increase by 11%. It was against this background that the Minister of Health introduced his proposals last week, details of which are recorded in our Parliamentary notes on p. 437.

If the Health Service is to develop according to needs—and the need for more and better hospitals is one of great urgency—the money it requires is likely to increase, especially if the cost of living goes on rising. Expenditure on it in terms of a percentage of a rising national income has hardly varied between 1949, when it was 3.7%, and 1959, when it was 3.6%. This has not been enough. Mr. Powell's problem, as he explained it, is that if the country looks to the Exchequer for the extra money needed, future development of the Service would be endangered. In plain words he is saying that there must be a limit to what the State pays for its Health Service and the balance must come from the consumer.

Most of the new revenue will come from the increases in the National Health Service contributions of 1s. per week for the insured man and proportionately for others. This will bring in £49m. in a full year. The doubling of the prescription charge, to 2s. per item on a prescription, is expected to save £12½m. This is the most controversial of the proposals, since it imposes a financial barrier, maybe negligible in some cases but real in others, between the patient and the treatment he needs. For this reason the B.M.A. has always opposed this charge. It also objects to doctors in rural areas being made to act as collectors of these sums. The cost of drugs prescribed by general practitioners will be about £92m. gross (£80m. net) this year. Proportionate expenditure on this item has remained unchanged at about 10% of the total cost of the Health Service each year over the past nine years. Blame for the rising drug bill has variously been put on patients for demanding too much, doctors for prescribing too much, pharmacists for getting too much, and the pharmaceutical industry for charging too much, but the fact must be faced, and all countries are having to face it, that modern medical treatment, and the research which lies behind it, is expensive. To try to cheapen it, beyond ordinary prudent measures for preventing waste, could prove a costly economy.

The estimated saving of £1½m. on welfare foods is a debatable economy. Diets to-day are in the main adequate and the need for vitamin supplements has not the urgency it once had. Indeed, in 1956, a committee of the British Paediatric Association[1] investigated the possible risks of infants getting too much vitamin D. An infant on a commonly recommended diet, it stated, would receive about 4,000 i.u. a day, which is a striking contrast to the Medical Research Council's recommendation that the daily intake should be about 400 i.u. A year later a committee of the Central and Scottish Health Services Councils reported on the need for welfare food supplements, other than milk, and found that much of the evidence it received was "neither firm nor unequivocal." In commenting on their report at the time,[2] we asked, "Is the Government guilty of overprescribing because it sees the shadow of another Government promising more round the corner?" Plainly Mr. Powell is not going to be put off by shadows, but the effect of the proposals will have to be watched. The families which could most benefit from welfare foods are apt to be the most difficult to convince that they are worth having.

The Minister's proposals have already generated much party political heat, and there is every evidence that much more is likely to be given off in the debate on the Opposition's censure motion, which took place after we had gone to press. Both the Conservative and Socialist parties are pledged supporters of the Health Service and wish to see it prosper. Both have experienced the problems of financing it, and both in their time have resorted to placing charges on certain services. The Socialists set a ceiling of £400m. on expenditure in 1950, and introduced charges on spectacles and teeth in 1951. Had they remained in office there is no reason to suppose they would not have exercised the power they took to put on a prescription charge. Those who support Mr. Powell think that he is facing up to the realities of the

[1] See *Brit. med. J.*, 1956, 2, 1149.
[2] Ibid., 1957, 2, 285.

situation with courage. What the patient will hope for is a practical discussion on how to use available funds most profitably in developing and deploying medical resources to the greatest advantage of all.

PLANTAR WARTS

Despite a steady flow of papers on the subject of warts, not much progress is made in the control of them. Indeed there is very little real knowledge on the subject. This may be because the disease, which is almost universal, is rarely serious, has a tendency to spontaneous recovery, and lacks a specific therapy. That an infective agent is in part concerned seems probable from the clinical evidence, but it has not been convincingly demonstrated and its nature is problematical.[1 2]

No experimental animal is entirely suitable for research into warts, and the study of patients afflicted with them presents difficulties. The temperament of the wart is so volatile that there can be few diseases less suitable for controlled investigation. The personality of the patient and of the practitioner, the environment and the vehicle of treatment, the conscious and unconscious element of suggestion in the physician and of suggestibility in the patient—all these confound the issues to an extent rarely seen in other fields. Much labour over weeks and months can be spent treating a crop of warts to no purpose, and then a touch of a lucky charm will effect the cure. There is a growing tendency to refer patients with warts to hospital. Yet on the one hand this is rarely necessary and on the other creates an embarrassing burden of work to the detriment of the treatment of more serious conditions, though there are occasional circumstances when warts demand special attention.

There is little doubt that the incidence of warts has increased and that this is not merely an illusion created by the effect of a free health service. Perhaps plantar warts have increased in incidence more than others.[3] This is sometimes attributed to an increase in facilities at schools for gymnastic exercise, often performed in bare feet, and for swimming. Both environments are thought to favour the spread of infection in the school community, but there is some contrary evidence. The East Anglian Branch of the Society of Medical Officers of Health[4] found that the incidence of plantar warts in a school was directly related to the incidence of other warts, which could hardly depend on bare-foot exercises.

In treatment, what applies to warts generally applies to plantar warts, though some authorities consider that there are differences, perhaps in the causative agents, between plantar and vulgar warts. Plantar warts, like others, are commoner in children than in adults, especially in children approaching puberty, and they are commoner in people with a predisposition to moist skin. They tend to undergo spontaneous cure. Treatment can consist in radical destruction or, under devious guises, in "charming."[5 6] The folklore of charming is fascinating and may sometimes hold an undisclosed secret that should be further investigated.[7]

As to prevention, without more exact scientific knowledge we can only guess at modes of transmission and incubation periods; R. P. Warin[8] has suggested two to three months as the average incubation period. Since epidemics sometimes seem to arise through swimming-baths and gymnasia in schools, certain prophylactic measures might be investigated. The use of some footwear in gymnasia could be tried, while children using swimming-baths could have their feet inspected and be forbidden the baths if warts are found. A foot drill aimed at having dry instead of moist soles by the use of astringent lotions and foot powders should afford some resistance to infection. Perhaps too much attention is paid to the seed, the presumed infective agent, and too little to the soil, so that attention to sweating of palms and soles might be worth while.

Antibiotics are known to be of no value in treatment, but because of the emotional factors concerned with sweating tranquillizers have been advocated.[9] There have been no satisfactory controlled trials of the effect of internal medication, though this has often been given in the long history of warts.

[1] Bivins, J. A., *J. invest. Derm.*, 1953, **20**, 471.
[2] Lyell, A., and Miles, J. A. R., *Brit. med. J.*, 1951, **1**, 912.
[3] Rasmussen, K. A., *Acta derm.-venereol. (Stockh.)*, 1958, **38**, suppl. 39.
[4] East Anglian Branch of the Society of Medical Officers of Health, *Med. Offr*, 1955, **94**, 55.
[5] Rasmussen, K. A., *Acta derm.-venereol. (Stockh.)*, 1954, **34**, 144.
[6] Belisario, J. C., *Aust. J. Derm.*, 1951, **1**, 20.
[7] Bett, W. R., *Practitioner*, 1951, **166**, 77.
[8] Warin, R. P., ibid., 1958, **180**, 371.
[9] Lambergeon, S., *Bull. Soc. franç. Derm. Syph.*, 1954, **61**, 538.

SALARY CRISIS AT CAMBRIDGE

By 504 votes to 296 the Regent House of Cambridge University has approved the General Board's recommendation[1] that "scales of University stipend be the same for all officers in the same grade whatever the Faculty or Department to which they are attached." This means that medical members of the University staff will receive no additional payments for clinical responsibility, and that Cambridge will be unique in not offering such differential payments as are authorized by the University Grants Committee. Most reasonable people will sympathize with Cambridge's desire to preserve the university ideal—that the academic life should be a vocation and that academic society should be a homogeneous one—but the price of preserving this ideal at Cambridge is too high if it means "a major set-back for medical teaching and research in this country" (in the words of a resolution passed by the General Purposes and Finance Committee of the Board of Governors of the United Cambridge Hospitals).

Professor J. S. Mitchell, the Regius Professor of Physic, has already said that in the event of the ballot being unfavourable to the medical school he intends to do all he can to overcome the consequent difficulties. We can only hope that they will not be insuperable.

[1] See *Brit. med. J.*, 1960, **2**, 1579, and 1961, **1**, 266.

COMMONWEALTH MEDICAL CONFERENCE

OPENED BY PRIME MINISTER OF NEW ZEALAND

The Sixth Commonwealth Medical Conference held in Auckland last week was distinguished from its predecessors by the fact that it was opened by the Prime Minister of the country in which it met, Mr. Keith Holyoake, and sitting in the front row opposite him was the Leader of the Opposition, the veteran Mr. Walter Nash, Prime Minister before the defeat of his party at the last election.

Mr. HOLYOAKE, introduced to the Conference by Dr. J. R. DAWSON, Chairman of Council of the New Zealand Branch of the B.M.A., said that with two New Zealanders as President and President-Elect, Sir Arthur Porritt and Sir Douglas Robb, New Zealand was making its influence felt in the world of medicine. Mr. Holyoake said he had been amazed to find that the great achievements of modern medicine—from Pasteur to Fleming—had been made within the past 100 years. During the past 20 years progress had been astounding. The frontiers of medicine were being pushed back month by month, year by year. But such progress brought its own problems, especially by increasing the proportion of old people. We lived in an ever-shrinking world and had responsibility to spread our knowledge. Professional men were perhaps unaware of their impact on society. "We as laymen can say to you that you doctors have an enormous influence on the community in which you live." None should be satisfied with less than the highest standards of practice and of professional life.

Dr. S. WAND, in a brief and gracious response, said that the Prime Minister had probably inaugurated a new era in Commonwealth medical relationships by opening the conference.

Medical Association of the Commonwealth

This theme was introduced by Dr. WAND, who referred to recent discussions of the B.M.A. Council in London on extending the work of the Commonwealth Medical Conference. It was felt that this should be put on a firmer basis in the Commonwealth: they shared a common culture and a common basis in medical education. Professor D. E. C. MEKIE said that during the past few years they had observed the slow disintegration of the B.M.A., as it used to be. With the development of Commonwealth countries, new national medical associations had replaced the former B.M.A. Branches. True, they were affiliated to the parent organization, but what did affiliated mean? Was it enough? The Commonwealth Conference also existed, but members attending it came there largely by chance rather than by choice. Was this enough? They all shared common ideals and understanding, and there was a wish to come closer together. He made a plea for a positive aim with the various medical associations coming together as equals. They should consider such matters as the interests of members of one Commonwealth country leaving for another; they should have a vehicle for information on such matters as postgraduate medical education.

How should they set about forming such an association of Commonwealth medicine? Professor MEKIE did not think that for this an elaborate or expensive set-up was necessary: much could be done by individuals in a voluntary capacity. He thought the time had come when they should do something more than talk and pass pious resolutions. In supporting this idea, Dr. J. R. DAWSON suggested the formation of an interim committee. Sir ARTHUR PORRITT also urged the setting-up of a Commonwealth Medical Association. Dr. A. H. TONKIN (South Africa) was opposed to drawing up any written constitution for such an association, as was Dr. A. TALBOT ROGERS (U.K.), who wanted some mechanism for retaining the family ties among doctors of the Commonwealth.

Opening Commonwealth Medical Conference. Prime Minister, Rt. Hon. Keith Holyoake, speaking; Sir Arthur Porritt seated.

Arriving in New Zealand. Left to right, Lady Robb, Sir Douglas Robb, Sir Arthur Porritt, and Lady Porritt.

World Medical Association

Dr. T. J. QUINTIN (Canada) said that Canada did not think it necessary to set up still another medical association. Canada was especially interested in the World Medical Association and did not like anything that smacked of nationalism. (Dr. H. A. CLEGG (U.K.) had previously outlined the main achievements of the W.M.A. in the first ten years or so of its existence.) Dr. D. P. STEVENSON (U.K.) said there was a gap of two or three years between successive meetings of the Conference. Something should be done to maintain continuity between these meetings. It was not the intention of Britain to establish another organization but to have a mechanism for exchanging news and views. Dr. S. RAJANAYAGAM (Ceylon) urged that there should be closer professional ties between Commonwealth countries. Dr. T. G. SWINBURNE (Australia) thought that the decision to form an Australian Medical Association would strengthen rather than weaken the ties between doctors in his country and those in Britain. There was a revival of interest in Australia in the World Medical Association. They regarded the World Medical Association as a framework on which to build. They expected that one day the World Medical Association would become such a brotherhood of doctors throughout the world that a Commonwealth Medical Association would not be necessary. In further discussion during the afternoon support for the formation of a Commonwealth Association came from Dr. S. A. CABRAAL (Ceylon). Dr. M. J. DYAR (Eire), however, did not think an association was necessary: "Men build too many walls and not enough bridges." The Conference was one of the bridges and he agreed that a machinery for continuity was needed, as did Dr. J. O. MERCER (New Zealand). Dr. J. E. A. DAVID (Central Africa) thought a central association would be useful in exerting an influence on newly developing countries.

President's View

Sir DOUGLAS ROBB, who was invited to speak, was in favour of forming a Commonwealth Medical Association. The objects should include facilities for communication and information, assistance to travellers within the Commonwealth, and recruitment of doctors to serve in developing countries. There was value and virtue in the Commonwealth unit. Dr. J. R. DAWSON observed that the ordinary doctor was the man to get at. There were two types of Commonwealth countries: (1) those with a European background and origin, and (2) those which had grafted on to their different civilizations the ideals and practice of Western medicine. It was the latter they should try to help. Anyone trained with a Western outlook should be able to belong to a Western association. He proposed the title "Institute of Commonwealth Medicine." Dr. S. WAND then proposed setting up a Working Party, and after further discussion the following were appointed to serve on it: Dr. J. E. A. David, Professor D. E. C. Mekie, Dr. V. Prakash, Dr. T. J. Quintin, Dr. T. G. Swinburne, and Dr. A. H. Tonkin. The following were the terms of reference: "To examine and report upon ways and means of establishing the closest links between the national medical organizations of the Commonwealth with particular reference to the present affiliation agreements."

Interval during Commonwealth Medical Conference. Left to right, Sir Douglas Robb, Hon. Walter Nash (Leader of the Opposition), and Mr. Dougal Callander.

COMMONWEALTH MEDICAL ASSOCIATION

On Friday, February 3, the Conference met to consider the report of the Working Party, and after a brief discussion adopted its recommendations unanimously with some slight modifications. Each national medical organization is to be asked to sponsor the formation of a Commonwealth Medical Association. In the event of unanimous acceptance of this proposal the existing Conference may become the council of the new association. The Conference (or council) will continue to meet every two years and to preserve continuity of interest and effort in the interval. The Conference acted on the recommendation of the Working Party and appointed Professor D. E. C. MEKIE as the executive officer. It also agreed that for the time being the British Medical Association in London should provide facilities for a permanent secretariat.

The Conference accepted with acclamation the offer made by Dr. S. A. CABRAAL, Honorary Secretary of the Ceylon Medical Association, that the next Commonwealth Medical Conference should meet in Colombo in 1962. The text of the Working Party's report as adopted by the Conference is as follows:

Working Party's Report

1. The 1961 Conference, at its first session, appointed us to examine and report upon ways and means of establishing the closest links between the national medical organizations in the Commonwealth with particular reference to the present affiliation agreements.

2. We are firmly of the opinion that the existing British Commonwealth Medical Conference has served a most useful and valuable purpose, but we believe that much of this value has been lost because there has been little or no continuity between the meetings of the Conference. We further believe that ties would be strengthened if each member of each national association could be made to feel that he was a member of a wider organization whose purposes were to look after his interests and to disseminate information from all parts of the Commonwealth. We believe that this can best be done by building upon the existing structure of the Commonwealth Conference and by providing a more effective link between the various national associations. With these broad considerations in mind, we recommend:

(i) That the national medical organizations in the Commonwealth be invited to sponsor the formation of a Commonwealth Medical Association.

(ii) That all members of the sponsoring organizations should become automatically members of the Commonwealth Medical Association.

(iii) That the objects of the Commonwealth Medical Association should be to effect the closest possible links between the sponsoring bodies and to foster the interests of all its members.

(iv) That in the event of unanimous acceptance the existing British Commonwealth Medical Conference may become the governing body of the proposed Commonwealth Medical Association, and to avoid confusion we would recommend that its existing title be dropped and that

in future it be termed the council of the new association. We think it should meet every two years or more often as required. As the governing body, the council would issue instructions to the secretariat.

(v) That the national medical association of the country in which the council meets should appoint a president who would preside at the meeting.

(vi) That the council itself at the end of each meeting should elect an executive officer who would act for the council, and to whom the secretariat would look for guidance in the interval between meetings.

(vii) That each of the sponsoring associations should be asked to develop a suitable organization in its own country and nominate one person who shall be asked to keep in touch with the central and other national secretariats.

(viii) That there should be a permanent central secretariat, and that the offer of the British Medical Association to provide such facilities be accepted at any rate for the time being.

(ix) That functions of the central secretariat be (*a*) to disseminate information on matters of mutual interest to all the sponsoring associations, (*b*) to carry out such duties as may from time to time be decided by the council, and (*c*) to prepare in consultation with the executive officer the agenda for council meetings.

(x) That the financing of the proposed council be the same as for the existing Commonwealth Conference—namely, the London formula. We are informed that the secretariat, both nationally and centrally, can be provided without additional cost to the proposed association. In this way the sponsoring association would be liable for no expense over and above that already incurred in connexion with the existing Commonwealth Conference.

(xi) That each member of each sponsoring association be entitled to a membership card affording him the amenities of all the sponsoring associations when visiting these countries. This in effect would become a "medical passport" for all doctors in the Commonwealth.

(xii) That information be disseminated by a quarterly newsletter from the central secretariat to be distributed by the national secretaries by such means as may be most appropriate.

We do not recommend the publication of a journal.

Finally, we would suggest that, if these recommendations commend themselves to the Conference, they be circulated for approval to each national organization with a specific invitation to become a sponsoring body of the proposed Commonwealth Medical Association.

Photographs by courtesy of New Zealand Herald.

British Medical Association

129TH ANNUAL MEETING,* AUCKLAND, NEW ZEALAND, 1961

SUMMARY OF PROCEEDINGS

FIRST PLENARY SESSION—HEALTH OF THE MIDDLE-AGED EXECUTIVE

Monday, February 6

With Dr. DENIS ROGERS (Hamilton) in the chair, Dr. MURIEL BELL (Dunedin) read a paper on "Calories, Corpulence, Cholesterol, Cows, and Corn." She gave a review of work and current opinion in New Zealand, the U.S.A., and Great Britain on the relation between obesity and the various forms of dietary-fat disease. She had been unable, she said, to find any clear answers to the questions implied in the title of her paper. The statistics on the relation of cholesterol and arteriosclerosis were imperfect. On the question of diet in connexion with the health of the middle-aged executive there was general agreement that overweight increased the risk of degenerative arterial disease. But they had to admit that this was a disease in which a number of factors converged and that they did not actually know the cause of arteriosclerosis. It was prudent to reduce the amount of fat in the diet as a means of achieving reduction of weight. The first rule was to get thin. The second rule was to stay thin.

Dietary Theories

While research in the U.S.A. had been preoccupied with dietary theories, studies in Britain had been directed to finding why there was an increased tendency for occlusion of the blood vessels. People in light occupations were more prone to coronary thrombosis than those in heavier jobs. It could therefore be inferred that one of the factors contributing to this disease was lack of physical exercise. The value of physical activity taken regularly, and not in violent bursts during the week-end, was believed to lie in speeding up the flow of blood through the coronary vessels. Exercise also helped to metabolize any excess of fatty substances in the blood stream. Although an increase of fat in the diet caused an increase in the blood cholesterol, recent evidence suggested that except with very high blood cholesterol values the association between a raised blood cholesterol and clinical manifestations of arteriosclerosis was tenuous. Although unsaturated fats lowered the blood cholesterol there was little agreement that a diet with a preponderance of unsaturated fats such as fish, corn, or vegetable oils was of any value in the prevention of coronary disease. Occasionally the administration of unsaturated fatty acids might be followed by a rise in the blood cholesterol. Limitation of cholesterol in the diet was also likely to be unhelpful, as the body could synthesize endogenously at least two grammes daily. The fact that the American Heart Association had sponsored the promotion of vegetable oils would certainly result in creating a demand from patients. It was therefore just as well that they should be aware that there was no proof that it would do any good. Even if the cholesterol level were lowered by dietary measures there was no guarantee that the outcome was going to be the postponement of coronary thrombosis or removal of atheromatous patches. No answer whether dietary manipulation was going to be effective would be forthcoming for five to ten years.

Hypertension

Dr. G. P. HALLWRIGHT (Wellington) then spoke on "The Problem of Hypertension in Middle Age." He said that hypertension was one of the greatest problems facing the medical profession. It was often difficult to detect the presence of arterial degeneration until a major vascular disaster had occurred. There was a tendency to delay treatment until complications appeared or pressure became excessively high. Earlier attempts to restore blood-pressure to near normal should improve the outlook by lessening arterial stress. The single reading of the blood-pressure was of little value, and he was convinced that the ideal control of blood-pressure was usually not possible outside a clinic. In a series of cases treated with a placebo or monoamine-oxidase inhibitors he had found that with the placebo the mean diastolic pressure fell from 107 to 93 by the third week. The hypotensive effect of the monoamine-oxidase inhibitors was greater. Dr. Hallwright considered that study of the electrocardiogram taken at the first attendance might provide a useful pointer to future developments. He then gave an account of his observations on a number of cases in which changes in the electrocardiogram had been related to the diastolic pressure.

*Held in conjunction with the Biennial Conference of the New Zealand Branch of the B.M.A.

Prevention of Coronary Thrombosis

Dr. JOHN H. HUNT (London) spoke on "Coronary Thrombosis—Is it Necessary?" He stressed the importance of appreciating the natural history of coronary thrombosis. Even before the advent of modern management repeated coronary thrombosis was sometimes consistent with longevity. At the same time he emphasized the achievements of modern management of this disorder. Doctors were particularly at risk and often bad advertisements for their own treatment. He had been impressed by the importance of familial and hereditary tendencies. The incidence of coronary thrombosis was greater in the higher income groups and with inadequate exercise, diabetes, hypertension, gallstones, gout, and myxoedema. It was a disorder of men rather than women. The effects of other factors such as worry, lack of sleep, smoking, alcohol, stimulants such as tea and coffee, excessive travelling, overwork, and inadequate relaxation were more controversial. Whatever our professional opinions, however, we had no right to force them on the patient, who was entitled to lead his own life so far as his health was concerned in any way he thought fit.

In the present state of knowledge his advice was that any food that predisposed to obesity should be taken sparsely. Although their value was as yet unproved, he advocated the use of unsaturated fats as much as practicable—for example, the use of vegetable rather than animal fat for frying. It was, however, important to preserve a sense of proportion in order to avoid the predicament of the patient who after a recent television broadcast had come to the conclusion that the only way to avoid coronary thrombosis was to eat frozen fish, washed down with whisky. It was often neither possible nor desirable to attempt a drastic rearrangement of a man's work, but particular attention should be paid to stresses to which he might be subjected, particularly at home. Exercise should be taken regularly and not in irregular bursts. Regular exercise was of particular importance in this age of mechanical transport. Sleeplessness should be treated in the first instance by endeavouring to find out any predisposing worries, particularly those that occur to the early-waking patient. Narcotics and tranquillizers should be used only as a secondary remedy. Smoking was an arterial poison, as shown by the advent of angina pectoris or intermittent claudication brought on by smoking even one cigarette. Occasionally, however, the advantages of the discontinuance of smoking had to be balanced against an increase of weight. It was difficult to assess the effect of regular commuting to and from big cities. Prolonged air travel, however, with rapid changes in climate, was scarcely likely to be beneficial. Alcohol in moderation was likely to be beneficial by increasing relaxation, particularly after a hard day's work. Excess, however, was certainly harmful. Any ill effects produced by tea and coffee were more likely to be the result of interference with sleep. Finally, Dr. Hunt stressed the importance of relaxation, whether through philosophy, religion, or other ideology, rather than through medicated survival from the regular consumption of large quantities of tranquillizers. He concluded that it might well be that peace of mind, a generous spirit, a sense of proportion, and a sense of humour had a better effect on our blood chemistry, calorie absorption and requirements, and on our coronary circulations than any of us dream at present.

Routine Medical Examinations

Dr. J. J. O'DWYER (London) spoke on routine medical examinations of the middle-aged executive. He found considerable difficulty in defining the terms executive and middle age. With regard to the first, he preferred the word "manager" to the word "executive," and concluded that managers were to be found not just in industry and commerce but amongst doctors, lawyers, and others, many of whom had to act in a managerial capacity, while every community activity called for a manager. Any examination would be useful only if it was carried out by a doctor so trusted that the man or woman seen would be able without hesitation to speak about his or her domestic, social, and work anxieties as well as satisfactions. These affected the health and well-being of every one of us. It seemed difficult to find a logical answer to the question, "At which age should medical overhauls take place?" But from an impression gained by his colleagues and himself after some years' experience it would appear that between the ages of 40 and 50 there could be several stresses on men and women, physiological and psychological, which would perhaps make it reasonable for a scheme allowing persons of that age-group a voluntary medical overhaul. He emphasized that professional confidence was essential if such examinations were to be of value.

In this age-group, symptoms of psychological distress, more often indicative of domestic distress than difficulties about work, were present in 40% of patients presenting themselves voluntarily for examination. He had been unable to find any evidence of the increase of organic disease with increasing responsibility, with the exception of peptic ulceration. In discussing such a scheme for voluntary medical overhaul, however, one must reckon first of all with the personality of examinee and doctor; secondly the amount of time which would be necessary if such medical overhauls were to be of value; and, thirdly, the amount of time available to those employed in general, industrial, or consultant practice in the countries they were speaking of—in other words, the amount of work to be done and the time available to do it. There was also the real risk of engendering a hypochondriacal state of mind. Dr. O'Dwyer made a plea for the cultivation of interests other than the work engaged in. Summarizing his remarks he said that between the ages of 40 and 65 periodic medical examinations could be of value, provided they were on a strictly voluntary basis, and provided the physician was known and trusted and understood the conditions of his patient's work and domestic life.

Correspondence

School Health Service

SIR,—Your appeal for a revision of the school medical service (January 21, p. 190) is timely. All would agree that the service in the past has made a significant contribution to the health of the nation. The service seems to have lost some of its impetus and appeal since the inception of the National Health Service. This has been brought about largely by the improved facilities available for children in the other branches of the National Health Service. General practitioners are now more ready and confident in dealing with children following the increased emphasis placed on paediatrics in the medical curriculum and with the removal of the financial barrier. The extension and improvement of hospital paediatric services have also played their part.

The school medical officer still has a significant contribution to make to the health of the child. In particular his special local knowledge is invaluable in the assessment and the provision of facilities for the many types of handicapped children. He should be brought into closer association with the hospital services. This is already partly achieved in some areas by the assistant school medical officer attending hospital and particularly paediatric out-patient clinics and ward rounds. Those who have experienced this collaboration can vouch for its success, particularly in the medium-sized hospital groups serving well-defined local authority

areas. This association should be put on a firm contractual basis and the school medical officer made to feel an active partner in the hospital team by allocating definite sessions to this work. This could be done by reducing the time spent by school medical officers on school medical inspections. These inspections in the past served a useful purpose in discovering defects at an early stage; with increased standards of living and the availability of other medical services routine inspections do seem to have largely outlived their usefulness. There can be very few defects in schoolchildren that cannot be picked up by school nurses or teachers.

Many regional paediatric departments are finding it increasingly difficult to fill appointments at around registrar level. The posts could be filled by assistant school medical officers. This would add variety and interest to their work and broaden their outlook, with the possibilities of continuing a career in the school medical service, public health, or in paediatrics.

It is generally agreed that one of the failings of the National Health Service is its tripartite form with poor integration. One way of helping this integration is by dual appointments. This is being done in increasing measures by the appointment of general practitioners to hospital staffs. Indeed, if it were not for these appointments the hospital services would be curtailed. In a similar way the opportunities exist for closer integration between the local authority services and the hospital service by appointing school medical officers to hospital staffs. This would surely be to their mutual advantage and would give the school medical service a new lease of life.—I am, etc.,

W. P. SWEETNAM.

The Royal Infirmary,
Huddersfield, Yorks.

Ocular Lesions in Kwashiorkor

SIR,—I read with very great interest the comprehensive account of kwashiorkor in Durban by Drs. Joan Scragg and Carol Rubidge (December 17, p. 1759). The very high incidence (about 20%) of frank malnutrition amongst the admissions to their paediatric unit, which are in the region of 5,000 annually, provides an unfortunate wealth of clinical material for further study of the gross manifestations of kwashiorkor.

Their account and photograph of the ocular lesions were of special interest to me as one who has worked on the effects of malnutrition on the eye for the past 10 years. It would seem that they are correct in attributing the corneal damage in their 14 cases to vitamin-A deficiency, but determinations of the level of this vitamin in serum would provide valuable information in future cases. No mention is made of vitamin-A therapy. The arrest of the ill-understood process of colliquative necrosis in keratomalacia by a dose of 100,000 i.u. vitamin A is one of the most dramatic therapeutic tests in medicine.

Whilst the blinding effects of gross deficiency of vitamin A have traditionally been associated with the technically underdeveloped parts of Asia, recent work, including our own in Central Tanganyika,[1] has shown that these may constitute a major cause of blindness in infancy in the more arid parts of Africa. Xerophthalmia and keratomalacia are probably the most common lesions associated with, but not directly due to, protein malnutrition.[2] The condition described by Blumenthal,[3 4] in East London, and also seen occasionally in East Africa,[5] is not due to vitamin-A deficiency. Although usually occurring in malnourished children, its aetiology is obscure and it has only been reported amongst the Bantu.—I am, etc.,

D. S. MCLAREN

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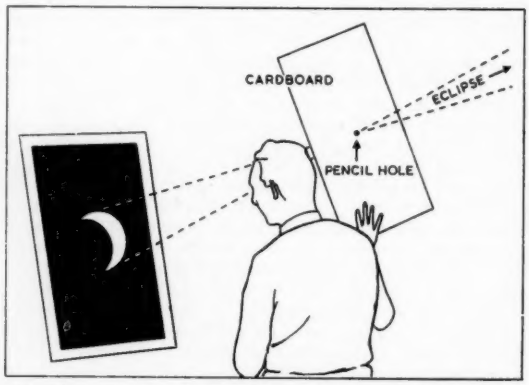
[5] McLaren, D. S., ibid., 1960, **19**, 89.

Retinal Burns After Eclipse

SIR,—About one year ago we had occasion to report (December 26, 1959, p. 1487) a considerable number of cases of small paramacular solar burns in the eyes of people who had looked at the sun using inadequate filtering arrangements during the eclipse of October 2, 1959. The majority of these cases were children, and



Projection method of viewing eclipse, after Flynn (*Med. J. Aust.*, 1960, **1**, 85, Fig. 1). N.B.—For clarity of illustration the sun's image has been enlarged and the part of the card in shadow has been shown as black, but, as Flynn points out (*Brit. med. J.*, 1961, **1**, 68), this card, in practice, should be white. He also states that a hole made by a pencil is better than the pinhole originally described.

follow-up of a number of them has demonstrated that many of these lesions have persisted, with in most cases a small residual scotoma.

We note from our diaries that a further partial eclipse is reported as being due in Britain on Ash Wednesday (February 15), and we feel that this would be an appropriate time to draw to the attention of the medical profession the grave dangers of looking at the sun with the naked eye or inadequate forms of dark glasses. It has been pointed out by Flynn[1 2] that the only safe way of watching the sun's face at any time is by projecting an image of the sun from a small hole in a piece of card on to another piece of clear card (see Fig.), and that in no circumstances should those without special training and knowledge attempt to inspect the sun's disk directly.—We are, etc.,

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A. H. OSMOND.
D. ST. CLAIR ROBERTS.
B. THORNE THORNE.

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Infectious Mononucleosis

SIR,—I beg to differ with Dr. D. P. Mullan (January 28, p. 289), who says that the early appearance of palatal petechiae is pathognomonic in infectious mononucleosis. In the 14 cases with this sign I culled from over 2,800 upper respiratory illnesses in a general practice, six were other specific diseases: two measles, two scarlet fever (both epidemic at the time), one chicken-pox, and one roseola infantum. A seventh case I thought was roseola, too, but the course was not as exact as one expects in that disease and the child may easily have had glandular fever in a shortened form. The seven remaining cases (four children, one 16-year-old, and two 20-year-olds) all were short respiratory illnesses.—I am, etc.,

Gravesend, Kent. B. DALTON.

SIR,—Dr. D. P. Mullan (January 28, p. 289) states that palatal petechiae are pathognomonic of infectious mononucleosis or "glandular fever." In observations extending over more than 30 years I have noted the widespread occurrence of palatal petechiae in numerous epidemics of influenza. This tendency to a haemorrhagic state is also shown in blood effusions under the conjunctiva, bleeding from the ear-drums, bleeding from the nose (not necessarily extensive), and blood-specked sputum.

An interesting point is that in some epidemics there have been a number of cases with enlarged cervical glands. In the present epidemic adenitis has been very noticeable, chiefly in the neck. In several cases there appears to have been abdominal adenitis. When this affects the glands in the right iliac fossa, and there is pain, tenderness, or raised temperature, the diagnosis from appendicitis is an anxious problem. Around Christmas I saw three such cases in quick succession. Before the war there was an epidemic in which I suspected appendicular signs to be due to influenzal adenitis in the right iliac fossa. Where glands in the mesentery in the region of the umbilicus are affected, the clinical picture is that of an acute localized ileitis. The occurrence of marked adenitis (not necessarily cervical) in connexion with epidemic influenza presents an interesting problem.—I am, etc.,

Southport, Lancs. A. N. M. DAVIDSON.

Aetiology of Ulcerative Colitis

SIR,—Your issue of January 21 contains 21 pages on ulcerative colitis, all, with the exception of one article, repetitive of the therapeutic findings aired in a series of papers published in recent years. These findings suggest that certain drugs present approximately an even chance of producing remissions, but they are obviously not specific and throw little light on aetiological problems. It is fair to say that this intense research fervour is undirectional towards the discovery of organic causes and organic modes of treatment and little mention is made of the alternative psychosomatic approach, except for about 50 words with no references. Only once does psychotherapy receive a whole sentence where Dr. Geoffrey Watkinson (p. 147) states: "Psychotherapy, particularly in acute disease, has proved singularly ineffective and occasionally harmful," thereby in his final words admitting the psychological relevance. He does not state whether these are his own observations, and the use of the word "particularly" saves him from the charge of misrepresenting and ignoring the literature.

Dr. S. C. Truelove (p. 154) now proposes a new, though partial, hypothesis that some cases of ulcerative colitis have a bowel sensitivity to milk and cheese. Inasmuch as the time taken to produce a relapse by administering milk is variable, and that recovery by the use of "even-chance" drugs is rather slow after the withdrawal of milk, to that extent the evidence must be considered to be inadequate. Further, the calculated probability that these relapses are far more likely to be due to milk than to other causes may be vitiated by other uncontrolled factors in the total setting of the experiment. To anyone familiar with the personality of these subjects one reads with some impatience of a housewife of 29 years of age, or of a medical student aged 24, as a total available description and which is so devoid of meaningful social and psychological relationships that one cannot guess the patient's reaction to these experiments.

Let us look at "Case 5," a schoolgirl aged 14 about whom nothing personal emerges from the history other than her disbelief in milk being harmful. Dr. Truelove readmits her to hospital in a state of robust health after recovery from previous ulcerative colitis. This pubescent child is then treated with a bottle of milk, which Dr. Truelove regards as a mere nutriment containing allergens, examined with a phallic-looking sigmoidoscope three times in ten days, and with a barium enema syringe which is used on two occasions and presumably in the dark. He then comments, "In one sense it was unfortunate that it was judged necessary, because of the distance of her home from Oxford, to admit her to hospital for the actual reintroduction, because protagonists of the psychosomatic theory of the causation of ulcerative colitis would possibly regard the fact of readmission as sufficient reason for the relapse." These protagonists would think this remark naive. They would wonder why the patient went home after the third sigmoidoscopy when the relapse was evident, and they would realize that the total setting of the experiment, as I have described it, contains many other possible causes of relapse besides the administration of milk. Further, they would notice that milk has another significance inasmuch as it is the main food of infancy and the early dependency period.

Let me briefly state the psychosomatic viewpoint. It is now well evidenced *but not apparently well known* that ulcerative colitis occurs entirely in individuals of a characteristic make-up—inadequate, immature for age, dependent personalities with poor communicative capacities, who are subject to exacerbations of the stresses which have shaped their development. It is equally well evidenced *but not widely accepted* that psychotherapy is an effective instrument in the treatment of these cases, at least as effective as any of the methods now in vogue with the exception of the final mutilation of ileostomy and colectomy. The organic lesion unfortunately may become an excuse which prevents or hinders the patient in the face of his fears and dependency from advancing towards social adjustment. Consequently we do not lightly use organic methods, unless absolutely necessary, which might make it more difficult for the patient to accept methods of emotional release which involve him squaring up to his psychological problems. I am sorry that the Leeds–Birmingham–Oxford axis preserves its apparently closed mind to the psychosomatic approach. There is plenty of good evidence for the psychosomatic viewpoint, but the theory is not so important as the successes that such studies have evoked.—I am, etc.,

London W.1. HUGH GAINSBOROUGH.

Maintenance of Piped-oxygen Supplies

SIR,—Cylinder manifolds feeding oxygen pipelines in hospitals are all fitted with connectors adapted to be coupled to cylinder valves having an outlet in accordance with British Standard 341, which is ⅞ in. (16 mm.), right-hand, female thread. This type of valve is fitted to oxygen cylinders of 48 cu. ft. (1.32 cu. m.) capacity and upwards and also to cylinders in this range which are used for compressed air, nitrogen, helium, helium/oxygen mixtures, and oxygen/carbon dioxide mixtures. It is thus possible, for example, for a compressed-air cylinder to be inadvertently connected to an oxygen pipeline.

Personnel responsible for the maintenance of piped-oxygen supplies should be reminded of this fact and of the recommended code of practice with regard to the storage and handling of cylinders and the system of cylinder identification laid down in British Standard 1319:1955. Cylinders are painted in the characteristic colour according to the colour code shown in this B.S.I. standard and, of course, also bear a printed label to identify the contents.—I am, etc.,

H. J. V. MORTON,
Honorary Secretary,
Association of Anaesthetists of Great Britain and Ireland.

London W.C.2.

Tooth Reimplantation

SIR,—In reply to Mr. R. R. Stephens's letter (January 21, p. 207) I feel that there are few faults in the construction of the Boyle–Davis gag; the troubles arise from not using it properly. The three important things are carefully to fit the dental part of the gag to the dental arch of the patient, to ask the anaesthetist to hold it with his hand and not to rely on any form of mechanical support, and to lift the gag instead of rotating it around the upper teeth.

The well-chosen gag of the correct size usually does not touch the central incisors but rests on the two lateral incisors and the canine teeth. The anaesthetist's hand gives with every movement of the patient's breathing, and a skilled anaesthetist never allows the gag to twist even if the patient inadvertently moves his head. It is the twisting movement that dislodges teeth; a pushing movement has to be extremely hard before it does so. Lifting the gag slightly, somewhat in the manner of a suspension laryngoscopy, lifts the base of the tongue to expose the tonsillar fossae and takes the tension off the upper teeth. Held in this way the Boyle–Davis gag can do no harm.—I am, etc.,

W. JOAN WADGE.

London W.1.

SIR,—Further to Mr. J. H. Sowray's mention of misuse of the laryngoscope (January 21, p. 208), I feel compelled to add misfortunes in the use of a gag clenched between the teeth when E.C.T. is administered, especially when a muscle relaxant is not used. Risk of damage to incisor teeth may occur when a gag is bitten and takes the impact of biting and plain E.C.T. is being administered and there are few teeth present in either or both jaws.

I do not use a gag when using E.C.T. because of injury to front teeth. It is necessary to warn an assistant to keep the patient's jaws closed by manual pressure on the chin, keeping the tongue in its usual place. If the teeth are kept approximated the tongue cannot be bitten nor the lips. If only one incisor tooth is present and E.C.T. is required, some prop to the jaws may be present. If only upper and lower incisors approximate accident risks are greatly increased and dentures or extraction may be considered.

A gag, therefore, may result in an injury which it was being used to prevent.—I am, etc.,

L. G. M. PAGE.

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Reiter's Disease

SIR,—I was delighted to see Sir Benjamin Brodie's[1] case history reproduced in full by Drs. J. K. Oates and R. M. Mason in their interesting article (December 24, p. 1878). The term "Reiter's disease," however confusing and unjustified, is now official, both in the American Medical Association's and in the International Classification of Disease. Reiter's disease is probably not a disease entity, and was certainly not first described by Reiter. It is true that there is a recognizable clinical syndrome with some or all of: polyarthritis, urethritis, conjunctivitis, iritis, keratodermia blenorrhagica, balanitis, stomatitis, and carditis. This syndrome may follow acute or chronic ileitis or colitis, or venereal, instrumental, or spontaneous urethritis. It would be preferable to talk of the Reiter syndrome, so that the patient's condition is recognized as a complication of the primary disease (e.g., non-specific urethritis, bacillary dysentery, or ulcerative colitis).

Reiter[2] in 1916 described the post-dysenteric syndrome as "a hitherto unknown infection." It has been known from antiquity that polyarthritis may accompany or follow acute dysentery, and full descriptions are given by eighteenth- and nineteenth-century clinicians. Kräuter[3] described cases of conjunctivitis with arthritis in an outbreak of dysentery in 1868. The patient of Markwald[4] had bacillary dysentery followed by urethritis, conjunctivitis, iridocyclitis, and arthritis.

Similarly, Brodie[1] in 1818 claimed that his case of the venereal syndrome "furnishes an example of a disease which as far as I know has not been described by any pathological or surgical writer." In fact there are eighteenth-century descriptions of polyarthritis following venereal infection, such as Swediar.[5] Kelly[6] quotes references to earlier English examples and suggests that venereal arthritis was first described by Hippocrates.[7] "A young man does not suffer from gout until after sexual intercourse" (Aphorism 30). Clearly, this is not a description of venereal arthritis, merely a statement about the age incidence of gout. Thus, "The diseases which do not occur before puberty are pneumonia, pleurisy, gout . . ." (Coan Prognosis 502), and "Gout does not occur in women except after the menopause" (Aphorism 29).—I am, etc.,

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Prolonged Heparin Administration

SIR,—Dr. P. Curzen (November 19, 1960, p. 1489) described the treatment of a patient with acute myocardial infarction and haematemesis to whom heparin was given through an indwelling polythene cannula and Gordh adapter for 23 days. He found the useful life of a cannula to be about 11–12 days before phlebitis compelled its removal to a new site. I have given heparin to 76 patients by a similar method and can support his views. However, I would like to make these further comments.

First, nylon and "teflon" are easier to use than polythene because they can be sterilized by boiling without distortion and are also a little better tolerated, the average duration being 12 days (limits 2 and 23 days) and 10 days for polythene. Gauge 00 (0.5 mm. bore) is a convenient catheter size because it can be introduced through an ordinary 17-gauge needle and rarely is it necessary to cut down on a vein. A 25-gauge needle stuck into the end of the catheter served me well as a connexion for the Gordh (or Forrester's) adapter, especially if the point of the needle was cut off. The catheter should be looped on the forearm and taped down in several places to prevent it slipping into the vein should it come adrift from the needle. Each day the catheter should be withdrawn about 1 cm., as this seems to delay the onset of phlebitis, which usually begins in the vein opposite the tip of the catheter.

The dose of heparin is most important, and it is easy to produce serious spontaneous bleeding by overdosage. This danger is very real in acute myocardial infarction, when fatal bleeding into the pericardium and myocardium can occur. It is likely that the risk of bleeding is greatest during the peak of the anticoagulant effect, which is usually in the first hour following a single injection. Any dose greater than 5,000 units may prolong the clotting time so greatly in this period that the blood may not clot at all *in vitro*. For this reason I feel that when the duration of action of a 5,000-unit dose seems inadequate (the clotting time at the end of four hours should be 10–12 minutes), the safest procedure is to increase the frequency but not the size of the dose. Where there are special circumstances, such as in the case described by Dr. Curzen, when myocardial infarction was complicated by haematemesis, a continuous intravenous drip seems the best method for heparin administration.—I am, etc.,

Melbourne, Victoria, Australia. ALLAN WYNN.

Megaloblastic Madness

SIR,—I must plead guilty to Drs. A. G. Freeman and J. M. Heaton in answer to their letter of January 14 (p. 128). Unfortunately the word "routine" was omitted from my statement concerning bone-marrow studies in their patients,[1] but I can assure them that this was merely due to an oversight. In my opinion their paper makes a profound contribution to our future understanding of vitamin-B_{12} metabolism, and I hope to quote them again (correctly) in the future.

In response to Dr. I. Atkin (p. 128) I can only say that I was guided by both medical and social reasons in using the title "Megaloblastic Madness." An excellent account of "Myxoedematous Madness" has already been given,[2] and there is no doubt that the two conditions have many features in common. Furthermore, the two underlying diseases occur together quite frequently with a dual incidence in one series of 11.2%.[3] In view of these facts it was felt desirable to stress the link between the cerebral manifestations of both disorders in the hope that whenever "madness" was the presenting feature in clinical practice two eminently treatable conditions might spring to mind immediately. Having been kind enough to comment generously about my article, he will appreciate that four of the six cases described received rather drastic psychiatric treatment coupled with certification in two instances. This is in no way meant to be critical of the case management, as I stressed that the diagnosis was often very difficult (if not impossible) to make in the early stages.

Unhappily, I do not know the answer to this problem, but am firmly convinced that it does not lie in estimating serum-B_{12} levels by present-day methods. This seems to me to be the flaw in the contention of Drs. Freeman and Heaton, expressed in the last paragraph of their letter. If serum-B_{12} levels are the possible answer to obscure neurological conditions, how do they explain the fact that 10 of their patients had figures of 200 $\mu\mu$g./ml. and above? It might be maintained that a therapeutic trial is justified in dealing with this sort of problem, but it seems to me that this is liable to produce more difficulties than it would solve. Also, a high percentage of the population at large have total serum-B_{12} levels of around 250 $\mu\mu$g./ml., and many of these are not suffering from deficiency. It is my contention that we are not measuring the factor necessary to establish a diagnosis of vitamin-B_{12} deficiency in its wider aspects. To me, this appears to be the crucial point arising from their excellent paper,[1] and I hope to publish in the future inferential evidence in favour of this viewpoint. However, I hasten to add that until the problem becomes elucidated it appears logical that patients with unequivocal clinical and supportive evidence of B_{12} deficiency should have their serum level (as measured by present methods) maintained at a high "normal" figure.—I am, etc.,

Institute of Clinical Research, Middlesex Hospital Medical School, London W.1. A. D. M. SMITH.

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Status Asthmaticus Treated by Hypnosis

SIR,—I was very interested in the case of status asthmaticus treated by hypnosis by Dr. A. H. C. Sinclair-Gieben (December 3, 1960, p. 1651).

The following two cases of acute cardiac failure which did not respond to treatment, and were near death, recovered with hypnosis.

Case 1.—A man aged 57 was seen on December 28, 1954. He had had a cold for eight days and was complaining of dyspnoea and a bad cough. On examination he was thin, emphysematous, slightly cyanotic, and looked very ill. He had spastic paraplegia for 30 years due to disseminated sclerosis. His temperature was 102.4° F. (39.1° C.), pulse 100, and respirations 40. Radiological examination of the chest showed: emphysema; old, inactive fibroid tuberculosis in both lungs; mottled shadows in both middle zones; narrow heart shadow. The sputum was negative for tubercle bacilli. A diagnosis of bronchopneumonia was made and the patient was admitted into a nursing-home. He was treated with "estopen" (penethamate hydriodide), 500,000 units, twice a day for eight days. A consultant-

physician saw him on the following day and confirmed the diagnosis.

The temperature became normal after three days and the patient improved. On January 4 there was a setback. He became dyspnoeic, the pulse rate went up to 160, and he developed extrasystoles. He felt very ill. A cardiologist diagnosed multifocal toxic myocarditis and right ventricular failure. The treatment consisted of intravenous aminophylline, four-hourly nikethamide, oxygen, and sedatives. The patient failed to respond and he gradually became worse. On January 7 his pulse was 170, weak, and at times imperceptible. Blood pressure 80/65. He was anxious, apathetic, panicky, and restless. He said that his strength was giving out and that he was dying. His condition seemed hopeless at 8 p.m.

It was then decided to try the effect of hypnosis to reduce the anxiety and abolish the restlessness and panic. There was some doubt, however, whether he would respond because of his age, inability to relax, severe dyspnoea, and angor animi. After half an hour of induction he began to relax and the breathing became less distressed. A fairly deep hypnotic state was reached. Suggestions were given that his breathing would become easier, he would relax more and more, he would feel stronger, and that he would recover and be able to enjoy life with his family. A post-hypnotic suggestion was given that he would go into a deep sleep which would last until the morning, after which he would feel ever so much better.

The patient was left after an hour and a half in a deep sleep. The nursing-home staff was instructed not to disturb him. When he was seen the following morning there was a great improvement in his condition. He felt stronger, less dyspnoeic, and more cheerful. The pulse dropped to 100, respirations to 30, B.P. was 100/80. He continued to improve and left for home on January 19. He resumed his work as a tailor on February 7 and continued with it until he died suddenly during the night of January 11, 1960, from cor pulmonale and gross right-heart enlargement, confirmed by a post-mortem examination.

Case 2.—A man aged 61 was suffering for years from chronic bronchitis and severe emphysema. He developed bronchopneumonia on February 20, 1959. He was treated with antibiotics. On March 2 he developed toxic myocarditis and heart failure. Pulse 160, with multiple extrasystoles, respirations 36, B.P. 90/75. His condition gradually deteriorated. Hypnosis was induced on March 5 at 9 p.m. He responded well. He became gradually more relaxed; his breathing was less distressed and finally he went into a deep sleep which lasted until late in the morning. He felt then ever so much better. Pulse was 84, respirations 30, B.P. 115/75. He made a full recovery. He has retired from his work, but is keeping fairly well.

Hypnosis helps to reduce the panic in a dying patient and to restore the emotional balance; it also mobilizes some hidden reserves—in these cases, cardiac. The first patient had little healthy lung tissue left, some of it having been affected by tuberculosis, some by emphysema, and the rest by bronchopneumonia. This was responsible for the right ventricular failure. Hypnosis as used in these cases seemed to influence purely physical diseases. It was used for direct symptom-removal, and, although some psychiatrists maintain that this may be dangerous, it was not so in these cases.

There was nothing abnormal in the psychiatric history of either patient. Both were happily married, had families, and were of stable personality. The first patient was able to adjust himself and live with the paraplegic disability for over 30 years. Schneck[1] states that anxiety and emotional distress resulting from organic heart disease may be ameliorated by the use of hypnosis, the latter being directed toward reducing fear and emotional turmoil, which result from impaired cardiac function and consequent fear of death. There is as a result of hypnosis an improvement in general sense of well-being, as well as in circulatory function. The views expressed by Dr. Sinclair-Gieben about the nature and action of hypnosis are well illustrated in these two cases.—I am, etc.,

London S.E.25. A. FRY.

REFERENCE

[1] Schneck, J. M., *Hypnosis in Modern Medicine*, 1953. Charles C. Thomas, Springfield, Illinois.

Epidural Anaesthesia and Bed Rest in Sciatica

SIR,—It is surprising that Mr. F. C. Dwyer and Mr. F. Howard Beddow (January 28, p. 286) should regard the induction of epidural local anaesthesia as "not without risk." No procedure is without risk; but this injection is certainly less dangerous than lumbar puncture—a routine enough investigation. During the past 23 years I have given the injection more than 20,000 times (not to mention those carried out by my registrars) and we have had no fatality. One patient, sensitive to procaine, became unconscious and needed artificial respiration. Two or three developed an aseptic meningitis, each recovering in a week. This is a small price to pay for a manœuvre that, as Dr. E. N. Coomes (January 7, p. 20) has shown, quarters the period of invalidism in sciatica with neurological signs.

Were the benefits of orthopaedic medicine more widely appreciated, patients would not only be spared weeks' avoidable pain, but great saving would accrue to the N.H.S. It costs some £50 a week to keep a patient in bed in a teaching hospital, whereas an out-patient injection cost only a few pounds. Economic no less than humanitarian considerations thus call for the practice of this simple injection, which has, after all, been a routine measure at St. Thomas's Hospital since 1937.—I am, etc.,

London W.1. JAMES CYRIAX.

Drug Prices

SIR,—I am glad you published Mr. K. J. Knight's letter (January 7, p. 53) in reply to mine about the prices of paracetamol tablets, because he mentions a factor which increases the disparity between the prices. I refer to the 25% "on cost" the chemist is authorized to add to the basic price. Two other factors mentioned are quite irrelevant, as they are exactly the same irrespective of the nature or origin of the tablet. These are: dispensing fee (1s. 2d.) and container allowance (approximately 1½d.) for 100 tablets. With regard to the drug tariff price (now reduced to 4s. 9½d. per 100 incidentally), the local manufacturing chemist whose price I quoted had in fact already reduced his price to one well below the official figure. I quoted his basic price for 100 tablets only as 3s. 10d. From a 1,000-tablet pack this would be 3s. This, I hope, deals with Mr. Knight's remarks about the size of pack.

In brief: I calculate that the sum payable by the National Health Service for getting 100 paracetamol tablets dispensed on a form E.C.10 varies from 12s. 6½d. for the most expensive of the branded products I know, through Mr. Knight's firm's product at 9s. 8½d. (from a 500-tablet pack) to the drug tariff price at 7s. 3½d. The local product could, under certain circumstances of prescribing, only cost the Service 5s. 0½d.—I am, etc.,

Brighton. R. S. SAXTON.

"Virugon" in Respiratory Diseases

SIR,—In your issue for December 17 (p. 1785) Dr. G. I. Watson presents a preliminary report on the failure of "flumidin" ("virugon") to influence two respiratory diseases. It is certainly of highest interest to learn as quickly as possible the spectrum and limitation of this new antiviral drug, and therefore Dr. Watson's communication ought to be received with satisfaction.

Dr. Watson, however, seems to be unaware of the fact that during the last two years more than a dozen experimental and clinical reports in the scientific literature have dealt with this new drug and its properties.[1 12–14 18 20–25] Furthermore, Dr. Watson seems not to be informed of the presentation of over 15 papers at the recent conference on N¹,N¹-anhydrobis(β-hydroxyethyl)biguanide-HCl (ABOB) and flumidin in Stockholm.[2–11 15–17 19 26 27] Some of the reports already presented cover uniform series of 1,500 to 2,000 cases each, and the whole clinical material accounted for in the literature of flumidin covers about 10,000 cases. The reasons for Dr. Watson reporting a handful of cases treated with flumidin (virugon) cannot be estimated from abroad, but, since Dr. Watson's conclusions are much more far-reaching than his preliminary clinical experience seems to warrant, I should like to take this opportunity to supply some information.

In my clinical treatment of manifest influenza which covers the period from 1952–3 I have been using as a criterion the return of the rectal temperature to normal in order to follow as objectively as possible the course of the disease.[20–23] My material covers three separate studies of this kind, carried out in military establishments under identical conditions. Two of them are included in my report published early in 1960.[23] Naturally no antipyretic or analgesic remedies were given in the course of those studies. Furthermore, it might deserve to be mentioned that Melander,[13–14] in his report on the pharmacology of N¹,N¹-anhydrobis(β-hydroxyethyl)-biguanide-HCl (hereafter called ABOB), also has carried out a series of experiments which show that ABOB has no antipyretic, analgesic, antihistaminic, or blood-sugar-lowering effect and does not stimulate the C.N.S. These negative findings together with a positive discovery that ABOB possesses antiviral effect, especially against influenza A, A_1, and B, indicate that the quicker return of the rectal temperature to normal in cases treated with active drug versus placebo controls may be considered as caused by the drug as such.

My two influenza-suppression studies already reported in the literature refer to a material of 163 cases during 1953–4 influenza A_1 epidemic (referred to as "The Swedish Influenza") and 162 cases treated during the Asian influenza of 1957. Both of these studies were carried out under double-blind conditions with placebo controls. Based on rectal temperature readings, statistically significant shorter illness periods were recorded in the groups treated with active drug. My third double-blind study was carried out during the 1960 influenza epidemic.[19] This material comprises 236 cases and it was found that the controls had a 70% increase of illness period over the flumidin-treated cases. Another observation in this material also has a direct bearing on Dr. Watson's comments, as it was found that significantly fewer secondary bacterial complications occurred among the cases treated with flumidin compared with placebo controls. Six bacterial complications were recorded in the placebo group in contrast to none in the active drug group. Stenkula[24] in his 1952–3 influenza-B trial found that the secondary temperature peak typical for the control material was eliminated in the group on active drug.

In the influenza epidemic during the winter of 1960 emphasis was laid on prophylactic studies. In my first prophylactic study during the 1957 Asian-influenza epidemic a protection of about 65% was reached. The studies carried out last winter showed statistically significant protection from 40% up to 95% with an average of 50–60%. These series were classified as serologically verified Asian influenza, influenza A_2, influenza B, and upper respiratory disease of probable viral origin.[27] Other clinicians have reported favourable influence of flumidin in herpes zoster,[18] measles,[15] and chicken-pox.[26] As reported in my published material, I have found indications of effect also against mumps, but since the material comprises only a handful of cases I have been reluctant to draw any definite conclusions.

Clinical studies on chemotherapy of virus diseases are complicated to carry out. They require more than the usual number of observation points and material with as uniform signs of the virosis under study as possible.—I am, etc.,

Boden, Sweden. BJÖRNER SJÖBERG.

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27 Zetterberg, B., Heller, L., and Gustafson, S., ibid.

Lumps in the Breast

SIR,—As both Mr. Robert W. Wyse (November 26, p. 1599) and Mr. Tom Rowntree (January 21, p. 209) have pointed out, aspiration of breast tumours is a useful and a time-saving investigation. If undertaken only on specific indications it is harmless, and during the last ten years I have aspirated one or two breast tumours each week.

Cysts are single or multiple and contain whitish, brown, or green fluid, or, occasionally, blood-stained fluid. The blood may be due to a papilloma or damage to a simple cyst wall by the needle. Only those tumours are needled which clinical examination suggests may be cystic, and the cyst must be completely emptied. The breast is carefully palpated after aspiration, and if no residual tumour is present the patient is re-examined in six weeks. These patients are nearly all under 45 years of age. It is surprising how often a cyst needs to be aspirated only once and does not refill. If any residual tumour is present it should be excised for biopsy. If no fluid is found, biopsy is performed within a week, and usually within three days. I cannot recall any case in which a cyst was aspirated of more than 5 ml. of fluid and which subsequently developed carcinoma, although in the course of years some of these breasts will on the law of averages develop a malignant tumour.

The saving in time and hospitalization is of value to the surgeon, but the delight of the patient who can

see her "tumour" in the syringe, and is saved the anxiety of waiting for admission and having a scarred breast, is most rewarding. It is rare for a carcinoma of the breast to contain within the tumour a cyst holding any quantity of fluid which is not blood-stained. To excise every breast tumour is not practicable or, I think, desirable. Tumours are often multiple and may be due to fibro-adenosis and sometimes contain multiple small cysts. Surely there is a place for diagnostic skill, and every case should not go to the "Court of Appeal." Repeated careful clinical examination at short intervals is, of course, essential in all cases where there is any doubt.—I am, etc.,

London W.1. H. A. KIDD.

"Obstetric Helper"

SIR,—Dr. A. H. Morley has frequently drawn attention to the danger of the use of the lithotomy position with general anaesthesia, most recently in the issue of December 17 (p. 1804). While commending his warnings, I should like to support Dr. M. Goodman's plea (January 21, p. 212) for the use of local anaesthesia. In hospital as well as in domiciliary practice nearly all procedures can be done satisfactorily and safely by this method. This is not a new discovery, but its value has not been fully appreciated. It is the duty of all who practise midwifery to train themselves in the use of local anaesthesia and to employ it regularly, reserving other forms of anaesthesia for the exceptional case. The writings of Mills,[1] Handfield-Jones,[2] and Hawksworth,[3] to mention only a few, are worthy of study.—I am, etc.,

Stockport, Cheshire. W. LOVE.

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[2] Handfield-Jones, R. P. C., *Practitioner*, 1957, **178**, 730.
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Fathers at Delivery

SIR,—I wish to make a plea for a more enlightened attitude to normal obstetrics. I should like to see a situation where the father is welcomed and encouraged to be present at the delivery. The birth of a child is the creative climax of the physical relationship between husband and wife, a time of intense emotional significance for them both. Rightly used, it can draw them closer together and provide the background of security so essential for a healthy childhood. With a few notable exceptions the practice is to exclude the husband from the labour and subject the wife to a state of complete emotional dependence upon the obstetrician. This may help the technique of obstetrics but does grave harm to what is of more lasting importance, the marital and family relationship.—I am, etc.,

London W.13. D. W. HILL.

Clinic Doctors

SIR,—I do not agree with Drs. N. R. Garden, Bridget K. Attlee, and Rosemary M. W. Ince (January 14, p. 132) when they suggest removing the doctor from his work at the baby clinic in order to furnish the child guidance clinics with more part-time clinical assistants. By so doing one visualizes that little further advice on preventive lines will be encouraged; but the doctor will instead lie in wait for the victim who may in time succumb to the stresses of home mismanagement.

Their letter, which contains several misconceptions, indicates that there are still many doctors who do not understand the functions of local authority clinics. It is not the ill child who is encouraged to attend, but the mothers who have problems which, in their own words, are too small to trouble their busy family doctors with. Their difficulties and anxieties usually require time and patience to unravel, and it is the aim of the clinics to do this. Unfortunately, there is little to show for all the effort, only a satisfied and much relieved normal mother and baby, who attract no attention, but who, perhaps, will be two less for the psychiatric unit. Anyone who works regularly in this field, particularly at the toddlers' clinics, I am sure will endorse what I have said.

As for differences of opinion among doctors confusing the mothers, I think that health visitors and local authority doctors, by virtue of their particular position and experience, are well aware of this, and are equally aware of the necessity for practising caution and tact when giving advice. They are certainly better informed on child care than most friends and relations, to whom mothers would otherwise turn even more if the clinics did not provide this help. If the general practitioner wishes to carry out all the extra duties of a preventive health service, he is still at liberty to do so. When the attendance figures at clinics start falling instead of rising as they are doing, then would be the time to cut down on the clinics.—I am, etc.,

Gatley, Cheshire. AITOLIA ENGLISH.

SIR,—As a general practitioner and a part-time child welfare clinic doctor, who has been following your correspondence on this subject, may I support Drs. N. R. Garden, Bridget K. Attlee, and Rosemary M. W. Ince (January 14, p. 132)?

If we are to be honest with ourselves surely the local authority child welfare clinic became obsolete with the advent of the National Health Service, when free advice for mothers with young children became available from their family doctors. If the family doctor carries out all the immunization procedure now necessary he is able to observe, regularly and unobtrusively, all the children in his practice until they are at least 18 months old. These regular visits, as well as helping in the diagnosis of congenital deformities, should help to build up the confidence of the young mother in her own doctor and lay the foundations for worth-while patient–doctor relationships in the years to come.—I am, etc.,

Harrietsham, Kent. R. T. DONALD.

SIR,—Having worked as an assistant in a busy practice for three years, given up to raise a family, and then joined the public health service, I feel the remarks of some of your correspondents are grossly unfair and misleading.

In a busy practice a conscientious doctor surely cannot have enough time to do a regular check-up on all his patients under 15 years. Neither has he a chance to see all the mothers at regular intervals in the first few years after their confinement. What prompts these correspondents to criticize those who have found defects in children that would never have been noticed? Do all mothers take their problems to a busy surgery? Do the parents of schoolchildren discuss all their problems with the general practitioner?

In our service, any defect noted is at once referred to the family doctor, who takes the appropriate action. Have your correspondents ever read the *Report of the Chief Medical Officer of the Ministry of Education*[1] ? Is medicine degenerating into a state in which the family doctor adopts the dog-in-the-manger attitude—afraid that something will be discovered that he has missed or never had an opportunity to find ?—I am, etc.,

School Clinic, Northampton. MARGARET O'CONNOR.

REFERENCE

[1] *The Health of the School Child—Report of the Chief Medical Officer of the Ministry of Education for the Years 1958 and 1959*, 1960. H.M.S.O., London.

SIR,—In reply to the letter entitled "Clinic Doctors" (January 14, p. 132), the allegation that clinic doctors are not allowed to justify their existence demands some substantial rebuttal.

How many G.P.s diagnose a dislocated hip or a subluxation of the hip during the first few weeks of life ? A mother will not take a child to her G.P. until the child is noticed to limp. If the condition should happen to be bilateral, the condition may be missed for years, as parents see nothing much amiss with a "waddling" gait. It has been my experience that babies are medically examined at their first visit to the clinic, usually also at their second visit, and then at three-monthly intervals until 18 months old, then at 2 years. How many G.P.s see "sniffly" babies (much on the increase in latter years) ? How many G.P.s have the opportunity or time to test a young baby for deafness, correct sight, backwardness, etc. ? How many G.P.s have the opportunity or time to watch "squints," and then not only arrange treatment but see that it is carried out, even by the worst type of mother ? How many G.P.s have the time to wait for a mother to waste the doctor's valuable time in getting something "off her chest"—but it is not a waste of time to that mother. It is merely a pre-child-guidance-clinic or pre-mental-hospital-treatment for mother. Assistant medical officers of health have years of experience of this, but must give way to part-time clinical assistants in child guidance clinics, who soon earn far more than these medical officers of health and scoff at the latter's lack of knowledge of the wonderful new science of psychiatry. I could go on at length with other examples.

A good health visitor never judges a good mother by the regularity of her clinic attendance. Her aim is for regular clinic attendance in the bad mother, who surprisingly enough will often come very regularly, although it is terribly uphill work getting advice to penetrate about the necessity of vitamins—the health visitor may know from her home visits that the child does not get correct foodstuffs—and protection through immunization. She will also receive advice from other mothers during the famous "cup of tea."

The clinic doctor, health visitor, mothers themselves, probation officer, attendance officer, and school teacher form a wonderful team. It may be said a lot of people are concerned, but everything is done with secrecy and all often for the sake of *one* tiny, dirty, tattered, ill-fed baby. As always, assistant medical officers of health try to diagnose illness early, even though they cannot prevent it entirely. But prevention is still better than cure.—I am, etc.,

Bridgend, Glamorgan. JENNET REES.

Radiological Hazards to Patients

SIR,—I have read with interest the letter by "Anonymous" (December 24, p. 1881) and the replies which have so far been published. This leaves me with very mixed feelings as to the actual intentions of the writer. As a radiologist who has practised his specialty both abroad and in this country, I find it very difficult to accept such statements. If the consultant radiologist did carry out such an extensive examination, obviously he did so to exclude a more serious condition such as carcinoma. When he had done so, it was much easier for the clinician to make the simpler diagnosis of tuberculosis. In neither of the two cases quoted by "Anonymous" has the age-group been stated. After all there is always another side to every story.

"Anonymous" seems to be under the impression that when patients are sent to consultants' clinics in hospital the patient has actually been seen by a consultant. In fact, however, many of these patients are seen only by registrars or a recently qualified house-surgeon who has not yet been registered, and the decision as to the nature and extent of the *x*-ray is made out by these persons. More often than not the patient is only seen by the consultant after the result of the *x*-ray examination has been forwarded to the clinic. Even worse, in some hospitals the general practitioner's letter is opened by a member of the clerical staff or even a junior nurse, and from their interpretation of the letter an *x*-ray request card is filled in. Does "Anonymous" suggest that such a method of investigation is preferable to the direct general practitioner's approach ?

In attempting to spare embarrassment to his colleagues he has put himself in the invidious position of an anonymous letter-writer. I appeal to him to come out from behind his iron curtain to give his radiological colleague an opportunity to defend himself, and to give us in the radiological profession a chance to refute his ill-founded allegations.—I am, etc.,

Manchester 21. Z. S. LECH-LACHOWICZ.

SIR,—Dr. J. W. Paulley (January 28, p. 289) states that he feels that students and residents do not know how to employ ancillary aids to diagnosis and treatment or how to assess the results. As a recently qualified doctor I feel that in both my student and resident days the possible pitfalls and inadequacies of radiological or laboratory investigations were stressed by those consultants and registrars teaching me. We were constantly taught to start with a full history and examination of the patient, and to view the results of all investigations in the light of the clinical state of the patient. Whilst young doctors may not have the detailed knowledge of the drawbacks of all tests, we have an awareness that science as applied to medicine is not infallible and can be misleading.—I am, etc.,

Harrogate, Yorks. H. S. RAWDON SMITH.

Service Overseas

SIR,—Having just returned from Nigeria I was very interested in the series of letters about service overseas.

If the newly independent States really want to recruit doctors why do they not offer permanent appointments ? Very few Europeans, unlike African students in U.K.,

have any wish to interfere with the politics of the country in which they work. One cannot be expected to have much interest in one's work if there is not at least a reasonable degree of permanency. There is no danger of the indigenous doctors being unemployed for the next generation. Also there must be a guarantee that the paring down of conditions of service will stop. I do not think that it would be asking too much of the Governments concerned to give a doctor seeking employment in their territories such assurances. This would do more for recruitment than all the hot air of the after-dinner speeches.—I am, etc.,

Holywell Hospital,
Antrim, N. Ireland. J. B. WALSH.

Oral Contraception

SIR,—Are none of my colleagues as apprehensive as I am about the threatened advent of oral contraceptive therapy? The prime function of the human race is to reproduce itself, and we are threatening to strike a blow at the very heart of the process which is responsible for the miracle of life itself. Will Nature let this indignity go unchallenged? Will she allow the creatures to whom she has given the privilege of existence to interfere with the process that gave them this existence?

To prevent contraception by mechanical barriers is a different thing altogether—this is merely controlling the end-product of a natural process, not interfering with the process itself. If Nature decides that science has invaded the very heart of her domain, what terrible penalties may she inflict upon the female of the species? Sterility? Ovarian atrophy? Malignant disease? Some authorities declare that so far, like a tolerant mother with a loved but erring child, she has not been provoked to punishment, but how long will her tolerance continue?—I am, etc.,

East Horsley, Surrey. DICK GLOVER.

Cervical and Preauricular Sinuses

SIR,—I was interested to read Dr. A. G. Martins's paper on lateral cervical and preauricular sinuses (January 28, p. 255), since I published six cases of the latter in 1926,[1] two having undergone the complication of retention cyst, infection, and subsequent ulceration at the lower anterior end of the track, this ulceration being at least 1 to 1.5 cm. in front of the opening of the sinus, or "ear-pit" as some writers have subsequently called it. Until my paper, this preauricular ulceration had evidently puzzled medical men faced with it, and its relation to the sinus did not seem to have been appreciated, and a series of treatments failed. As pointed out then, in the presence of this complication only excision will cure. It was gratifying to see a whole crop of references in dermatological circles to my report. Anyone sufficiently interested to refer to my paper will see that I was supported in my views concerning the embryology of this lesion by no less an authority than the late Professor J. C. Brash, then professor of anatomy in this school and, later, in Edinburgh, which explains why the sinus is not always in exactly the same spot, though in the region of crus helicis and tragus.

My paper also recorded two cases with strong family histories, though 35 years ago I fear I did not attempt to translate this into genetics. In an endeavour to assess the incidence of preauricular sinus I examined 500 random in-patients and found no case of the lesion. Though rare in a large community, one meets with these cases once or twice a year, often in young adults, after complications have occurred, and the full condition is obviously still not generally recognized. Excision has to be thorough, since it is easy to leave fragments of track behind which in due course cause trouble again. On one occasion, within the last four years, I thought I had failed in that the wound broke down and was replaced by inactive translucent-looking granulation tissue, and although the boy, aged 15 years, looked fit and healthy biopsy revealed tuberculous infection; this I have not encountered before or since. It would be interesting to hear of other experiences with this potentially difficult condition.—I am, etc.,

Queen Elizabeth Hospital,
Edgbaston, Birmingham 15. F. A. R. STAMMERS.

REFERENCE

[1] Stammers, F. A. R., *Brit. J. Surg.*, 1926, **14**, 359.

Cat-scratch Disease

SIR,—In the course of your excellent leading article on cat-scratch disease (January 21, p. 189) we are quoted in support of the statement that false positive intradermal reactions are rare.

In the article which is quoted[1] we recorded carrying out intradermal tests on 40 normal cat-lovers who gave no history to suggest cat-scratch fever. Of these, three gave positive results. The object of our report was to indicate that, although cat-scratch disease is seldom diagnosed, these positive and apparently specific reactions may be relatively common. This suggests that mild cases may pass undiagnosed and that the finding of a positive reaction must be interpreted with considerable care.—We are, etc.,

F. RAY BETTLEY.
E. A. FAIRBURN.

London W.1.

REFERENCE

[1] Bettley, F. R., and Fairburn, E. A., *Lancet*, 1953, **1**, 520.

Bodies for Dissection

SIR,—A personal friend of mine, whose brother died 18 months ago leaving his body for dissection, has this week been much distressed to receive notification of his funeral.

I have once previously known of much distress in a similar situation—though of the opposite character—because relatives were unable to obtain the body for interment after several months' application. If many other medical men are as ignorant as I am about the action which is usually taken when a body has been left for dissection, and what information is usually given, a statement by you would probably be of much help. An unfortunate experience like that of my friend this week could do much harm.—I am, etc.,

Hove, Sussex. W. A. BOURNE.

*** We referred Dr. Bourne's letter to H.M. Inspector of Anatomy, who states: "Every effort is made to respect the wishes of those who bequeath their bodies for anatomical examination and to consider the feelings of surviving relatives. If Dr. Bourne would furnish the names and the dates of death of the two testators to whom reference is made in his letter, immediate attention would be given to his complaint. If any doctor wishes information regarding bequests of this nature, inquiry should be made to H.M. Inspector of Anatomy, Ministry of Health, Savile Row, London W.1, and a note of the procedure for the area in which the doctor resides will be promptly forwarded."—ED., *B.M.J.*

Obituary

Sir HUGH POATE, M.V.O., M.B., Ch.M. F.R.C.S., F.R.A.C.S.

Sir Hugh Poate, one of Australia's leading surgeons, an international authority on diseases of the thyroid gland, and a past president of the Royal Australasian College of Surgeons, died on January 27 in the hospital he had served so long, the Royal Prince Alfred Hospital, Sydney. He was 77 years of age.

Hugh Raymond Guy Poate was born in Sydney on January 18, 1884, the son of the Surveyor-General of New South Wales. From Sydney Grammar School he went on to study medicine at the University of Sydney, graduating M.B., Ch.M. in 1907. He came to England for postgraduate study and took the Conjoint qualification in 1908 and the F.R.C.S. in the following year. Returning to Sydney, he joined the surgical staff of the Royal Prince Alfred Hospital in 1911 and soon became a well-known figure in the surgical life of Australia. Among his early publications were papers on the structure and function of the pituitary body and on bone grafts and tendon transplants. He gave distinguished service to his country in both world wars, to the Royal Australasian College of Surgeons, and to the Venerable Order of St. John of Jerusalem, being Chancellor of the Priory of St. John in Australia and a Bailiff Grand Cross. During the Duke of Gloucester's term of office as Governor-General of Australia, Mr. Poate, as he then was, operated on the Duchess of Gloucester and was appointed M.V.O. in 1947. He was knighted in 1952.

We are indebted to Professor LAMBERT ROGERS for the following appreciation: After bravely fighting for some years a disabling illness, Sir Hugh Poate died in Sydney, the city where he had been educated and in which he practised. There he performed his life work which established for him an international reputation in diseases of the thyroid gland and goitre surgery. Poate was a general surgeon and in his heyday was one of the busiest surgeons in Sydney, serving on the staff of the Royal Prince Alfred and other hospitals and being in much demand as a member of various societies and committees. He was a foundation Fellow of the Royal Australasian College of Surgeons, for many years represented New South Wales on its Council, and was its president from 1945 to 1947. In the first world war he served in the Medical Branch of the Australian Imperial Forces in Egypt, Gallipoli, and France, later transferring to the Air Force. When the second world war broke out he was consultant to the Royal Australian Air Force with the rank of Group Captain.

When reports of the antithyroid drugs were first published Poate was one of the first surgeons in Australia to realize their value for thyrotoxicosis, and he early practised and advocated their use for appropriate cases. This was at a time when other surgeons who were sceptical were continuing to resect the thyroid in all cases of diffuse toxic goitre.

"Hughie," as he was known to his friends, was a friendly, kind, and unassuming man with a love of his subject. His chief hobby was gardening. A past president of the Royal Horticultural Society of New South Wales, he delighted in growing orchids, and was a member of the Orchid Society. Many of his friends both in Australia and in Britain, and particularly those who towards the end of the second world war visited Australia with the British Pacific Fleet, will recall happy hours spent with him and his charming Grecian wife (who died in 1951; his first wife had died many years before) discussing orchids and plants and other flowers with them and sharing the happiness and fun with which they always seemed to be surrounded.

J. F. BRAILSFORD, M.D., Ph.D., F.R.C.P.

Dr. James Brailsford, who was well known as a radiologist, died at Queen Elizabeth Hospital, Birmingham, on January 28, at the age of 72. He had been consultant radiologist to the hospital in which he died, to the Birmingham Accident Hospital, and to other hospitals in the Midlands, and he was emeritus director of radiological studies in living anatomy in Birmingham University.

Born at Walsall, Staffordshire, on July 8, 1888, and educated in Birmingham, James Frederick Brailsford did not begin his undergraduate career until he was 30, having first worked in the laboratories of Sir John Robertson, the medical officer of health for the City of Birmingham, from 1908 to 1914 and then having served in the R.A.M.C. throughout the first world war. From 1915 to 1919 he was resident radiographer to the 2nd Birmingham War Hospital, and for his services in this appointment was mentioned in dispatches. As a medical student he was appointed prosector in anatomy and was awarded the Queen's scholarship in pathology and the Richard memorial prize. Having graduated in medicine from the University of Birmingham and obtained the London Conjoint diploma in 1923, he was immediately appointed assistant radiologist to the Queen's Hospital, Birmingham. Other hospital appointments rapidly followed, the more important of which were to the Royal Cripples Hospital, Birmingham, and the Robert Jones and Agnes Hunt Orthopaedic Hospital, Oswestry. There he gained his unique experience of skeletal radiology, and his book *The Radiology of Bones and Joints*, first published in 1934, gave him an international reputation. It ran into several editions and brought him invitations to lecture all over the world.

[*H. J. Whitlock, Birmingham*

Possessed of great ability and tremendous energy, Dr. Brailsford, despite his busy hospital appointments and by this time large private practice as well, found time to contribute numerous papers to the medical literature. In 1928 he obtained the M.D. and in 1935 the Membership of the Royal College of Physicians of London. His services to orthopaedic surgery were recognized by the award of the Robert Jones gold medal and prize of the British Orthopaedic Association in 1927 for a paper on deformities of the lumbo-sacral region of the spine, and in 1935 and again in 1944 he was a Hunterian professor of the Royal College of Surgeons of England. His own specialty honoured him by the award of the Roentgen prize of the British Institute of Radiology in 1936, by making him Mackenzie Davidson memorial lecturer in 1944, and by electing him the first president of the British Association of Radiologists (now the Faculty of Radiologists). He acted as one of the honorary secretaries of the Section of Radiology at the Centenary Meeting of the British Medical Association in 1932, and four years later, at Oxford, served the same section as a vice-president. The University of Birmingham granted him the degree of Ph.D. in 1936 and the title of honorary director of radiological studies in living anatomy in 1947. He was elected F.R.C.P. in 1941.

Dr. Brailsford's interests apart from his work were travel, golf, and photography, but after his retirement he took up painting, at which he quickly attained a remarkable proficiency. Most of his subjects were landscapes of parts of Wales near to the house which he had there and where

he spent a good deal of time after his retirement from hospital practice.

Dr. Brailsford's later years were marred by recurrent illness, and during this time he began to give forceful expression to views which were at variance with orthodox opinion. This robbed him of much of the reputation and status he had won by his earlier work, which had given him a place among the most distinguished figures in British radiology. The death of his wife in 1959 was a bereavement which affected him deeply.—A. G. W. W.

Dr. CRANSTON WALKER writes: Others will speak of the great services of James Brailsford in radiology—they are known beyond the frontiers of nations. Perhaps only to those nearer are known his lovable qualities, his kindness, and his tender heart. In conversation three weeks ago he regretted that he could no longer hold acting appointments; but, he added more cheerfully, "I can still see private patients for nothing." He maintained insistently that the concern of medicine was the welfare of the individual patient. He would not agree to patients being used for any other purpose, however well intentioned, and he would not deviate in the slightest from this principle. He feared that in nationalized medicine the intimate trustful relationship of doctor and patient would be diminished or interfered with. He was anxious about any method of dealing with patients in bulk. He feared that patients might be subjected to procedures not in their own interests, and he would not condone this, even in the interests of a medical science which ultimately might be beneficial. He was unhappy, and critical even, about experiments on animals to this end.

His kindly heart sometimes led him into errors of judgment and indiscretions of speech. He spoke his mind clearly and with courage. Those who knew him took no offence: they knew that he was moved solely by compassion for men and animals, and that they could agree warmly with his fundamental principles; and they admired his refusal to depart from them.

Brailsford had many abilities—in late life he painted landscapes up to exhibition standard—but he built up his radiological work and attained his eminent position from humble beginnings by devotion and immense assiduity, not always with encouragement. With increasing achievements and honours he remained unassuming and always helpful.

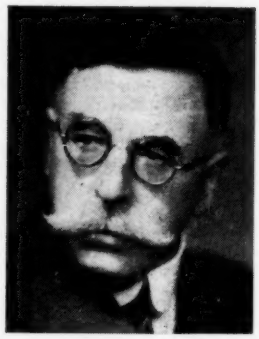
C. W. CUNNINGTON, M.B., B.Chir.

Dr. C. W. Cunnington, a leading authority on the history of costume, died on January 21 at his home at West Mersea, Essex, at the age of 82. For many years before his retirement he practised in Finchley.

Cecil Willett Cunnington was born in November, 1878. From Clifton College he entered Cambridge University, and then went on to St. Bartholomew's Hospital to receive his clinical training, graduating M.B., B.Chir. in 1905. After holding the post of house-physician at the Royal Northern Hospital, he had a brief spell in general practice at Highbury. Moving to Church End, Finchley, in 1909, he remained in practice there until 1945, except for the period of his service as a temporary captain in the R.A.M.C. in the first world war. Soon after he went to Finchley he became clinical assistant in the gynaecological department of the Royal Northern Hospital, an appointment he held for many years. For a few years before the first world war he was also clinical assistant at the Hospital for Sick Children, Great Ormond Street: he had a lifelong interest in the treatment of children's diseases, being the author of several papers on paediatric subjects. During practically the whole of his time at Finchley he was a member of the honorary medical staff of the local cottage hospital, and was very popular with all his colleagues in the neighbourhood.

Dr. Cunnington married Dr. Phillis E. Webb in 1918, and she not only shared the work of his practice but also his enthusiasm for the study and collection of English costume. Their books are a unique contribution to this branch of history.

J. L. N. writes: In his practice at Finchley Dr. Cunnington found that clothes old and new interested most of his women patients and some of the men. As one of a Wiltshire family distinguished in archaeology, he was a collector born. Soon a garage and much of his house were full of women's clothing, hats, and accessories. He was already considering the psychological aspects of dress and why women wore what they have worn at various times. His first book, *Feminine Attitudes* (1935), differs from other studies in the philosophy of dress because he was a historian who knew much about clothes. Six hundred items from his collection were exhibited in London in 1934 in aid of the Pioneer Health Centre. Queen Mary visited this exhibition just before it opened to the public; passing methodically from room to room she came at last to the bedroom display of underwear and nightdresses, with bust improvers and corsets pinned out like butterflies. What could be mentioned with propriety? "Ah," said the Queen, "a red flannel petticoat, I see."



In 1937 Dr. Cunnington published *English Women's Costume in the Nineteenth Century*, the first of his detailed studies of the dress of a period. He was extremely well read in nineteenth-century fiction, and, knowing the by-ways of literature, he explored women's magazines, newspapers, and biographies for anecdote and information. Doctors, he found, had been led to infer physiological differences between the sexes because prolonged tight-lacing affected respiratory function in women. His further psychological books, *Feminine Fig-Leaves* (1938), *Why Women Wear Clothes* (1941), and *The Perfect Lady* (1948), were enlivened by his sense of humour. *English Underclothes* (1951) was the first book on the subject to be published, and *English Women's Costume in the Present Century* (1952) brought his detailed illustrated study right up to date. He then began, and completed by 1959, a series of handbooks on dress of various periods, using Essex records and inventories and continually defining garments, materials, and dressmakers' terms.

Dr. Cunnington was not a historian of fashion; he did not collect fashionable clothes, but those worn by ordinary people, and this was what interested the public. It caused him regret that before the war the national museums showed no interest in acquiring his collection, but in 1946 Manchester Corporation bought it to form the basis of their Gallery of English Costume at Platt Hall.

On retirement to West Mersea, the Cunningtons continued to entertain hospitably at the Nothe, a long row of cottages not always above high-water mark. Perhaps it is as the central figure in long arguments and discussion round the fire or at the window that his friends will always remember Willett Cunnington as the outstanding costume historian of his day.

H. G. WILTSHIRE, M.B., B.Ch., D.P.H. D.T.M.&H.

Dr. H. G. Wiltshire, who spent most of his professional life in the Colonial Medical Service and who was senior pathologist in Uganda from 1936 to 1948, died in a Gloucester hospital on January 15, aged 71.

Henry Goodwill Wiltshire was born in Pietermaritzburg, Natal, on November 10, 1889. Educated in England at

Cheltenham College and Emmanuel College, Cambridge, he went on to King's College Hospital for his clinical training. After qualification in 1913 he became resident pathologist at his teaching hospital, but as soon as the first world war broke out he joined the R.A.M.C., serving until 1919. For part of the war he was bacteriologist at the Central Laboratories, Alexandria, and it was here he became interested in Egyptology. On demobilization he worked as a house-physician at Addenbrooke's Hospital, Cambridge, and then house-surgeon at Tunbridge Wells General Hospital. By this time he had determined to enter the Colonial Medical Service, and, having taken the D.T.M.&H. in 1920, he worked for a year as a demonstrator at the London School of Tropical Medicine. At about this time he graduated M.B., B.Ch. at Cambridge and took the D.P.H.

His first post in the Colonial Medical Service was as a medical officer in Nyasaland. He then went to Zanzibar, where he remained for about ten years, working for most of the time as a pathologist. An active worker for the B.M.A., he was secretary of the Zanzibar Branch for some years and president in 1935–36. He also attended two or three Annual Meetings as a representative. He moved to Uganda, as senior pathologist, in 1936 and he retired in 1948.

A colleague writes: Wiltshire was an enthusiastic clinical bacteriologist, who derived great satisfaction from his work on the rich variety of material which came to him from African hospitals and clinics. He was especially interested in intestinal pathogens, and his wide experience in this field was of notable value to clinicians. He did much to help in the training of African laboratory workers, having the practical needs of district hospitals foremost in his mind. A kindly and hospitable person, he was one of those unassuming men who made substantial contributions to the development of medical services in East Africa.

THOMAS DOOLEY, M.D.

Dr. Thomas Dooley, who died in the Memorial Hospital, New York, on January 18 at the age of 34, leapt to fame almost overnight in the United States when his work in establishing hospitals and clinics in Laos became known. In 1960 a Gallup Poll recorded that he was one of the ten most-admired Americans.

Thomas Anthony Dooley was born in St. Louis, Missouri, on January 17, 1927. He did a year's medical training at the Notre Dame University in 1943 and then joined the American Marines as a medical orderly. After two years in the Marines he went to the Sorbonne in Paris for a year's study and then returned to America to graduate at St. Louis University School of Medicine in 1953. He rejoined the navy as a lieutenant, and soon became known for the work he did at a refugee camp at Haiphong in North Vietnam during the war in Indo-China. He was awarded the National Order of Vietnam for his services.

In 1956 he resigned from the navy and settled in Laos. His mission was to set up hospitals and clinics in an area where modern medical facilities were almost non-existent. Later he was the driving force behind Medico (Medical International Co-operation Organization), a charitable foundation for providing medical help to under-developed countries. He himself is credited with raising nearly one million dollars for this organization. In 1959 he returned to the United States to be operated on for a melanoma, and on recovery he undertook a strenuous lecture tour in the United States in order to raise more money. He was never averse to publicity, for he found the American public responded quickly and generously to his appeals. Early in 1960 he returned to his village hospital on the Laos–China border. By the time that a recurrence of the growth finally forced him to return to New York at the end of last year he had established four village hospitals in Laos and had made plans for others elsewhere in Laos and Cambodia. He wrote three best-selling books on his experiences and turned over the royalties from these to help with the Medico programmes, which have included the inauguration of a mobile rural medical service in Singapore and a hospital in Kenya.

HEINZ LORD, M.D.

Dr. Heinz Lord, who was appointed Secretary-General of the World Medical Association only a few months ago, died in Chicago from a heart attack on February 3. He was 43 years of age.

Heinz Lord was born in Hamburg, of mixed German and Swiss descent, and studied medicine at the University of Hamburg and in Zurich and Berlin, taking his degree at Hamburg in 1942. During the second world war he was imprisoned in a concentration camp because of his association with an anti-Nazi movement and was liberated by the British troops, after being wounded in the final fighting. From 1947 to 1954 he held an appointment at the Hamburg-Barmbek General Hospital, receiving recognition as a surgical specialist in 1952 and as a specialist in urology in the following year. From 1949 to 1953 he was chairman of the Hamburg chapter of the Marburger Bund (German Employed Doctors' Federation). He left Germany in 1954 for the United States of America, and for the next three years he trained as a surgeon at Bridgeport Hospital, Connecticut, satisfying the State Board examiners in 1957. Since then he has been practising as a surgeon in Barnesville, Ohio. In September, 1960, at the meeting of the General Assembly of the World Medical Association in Berlin, he was appointed to succeed Dr. Louis H. Bauer as Secretary-General of the association as from January 1 this year. He leaves a widow and two children.

Sir GEOFFREY JEFFERSON, C.B.E., M.S., F.R.C.P. F.R.C.S., F.R.S.

The obituary of Sir Geoffrey Jefferson was published in the *Journal* of February 4 (p. 365).

Sir ARTHUR MACNALTY writes: In the passing of Geoffrey Jefferson I mourn not only a great neurosurgeon but a kind and generous friend. At the outbreak of the second world war I had nominated Hugh Cairns as consultant adviser in neurosurgery for the Emergency Medical Services. But Cairns was already consultant in neurosurgery to the Queen Alexandra's Military Hospital at Millbank and went to the Army early in the war. To replace him Jefferson was appointed as consultant adviser in neurosurgery for England and Wales. I had heard much of Jefferson from Harvey Cushing, who considered he had "one of the most searching and original minds in British medicine," but I did not meet him personally until February, 1940, when he came to the Ministry of Health to discuss his new appontment. We soon became friends as well as colleagues.

Jefferson's administrative work in addition to his operative skill must have saved a multitude of lives during the war. It was at his suggestion that notification of head injuries was introduced in the E.M.S. Such patients were transferred, as soon as was practicable, to one of the special head centres. In one region alone 1,000 head injuries were thus notified, of which 178 had been caused by air raids. Jefferson expended much time and trouble in visiting the special centres and encouraging and advising neurosurgeons. After the war he continued to advise the Ministry, promoted an efficient neurosurgical service in the National Health Service, including training of neurosurgeons, and fostered medical research. I should also mention the great help he gave to us in the official *Medical History of the War*, which Sir Zachary Cope acknowledges in editing the volume on *Surgery*.

My participation in research work with Sir Victor Horsley always interested Jefferson, and we had many talks on the subject. I had the privilege of proposing the vote of thanks to him for his Victor Horsley centenary lecture (published in the *British Medical Journal*, 1957, **1**, 903).

So to Geoffrey Jefferson, *Ave atque vale.* He is gone from us, but British neurosurgeons, especially those of the Manchester school, will tread in his footsteps fortified by his teaching and wisdom.

Professor N. M. DOTT writes from Edinburgh: The passing of Sir Geoffrey Jefferson is deeply mourned as a personal loss by his many friends and admirers; and it marks the mortal end of one of the truly great figures of British medicine. In both aspects he is immortal. Those who were privileged to know him as a friend will still turn to him for advice, for inspiration, or for consolation. His friendship was of such a quality, so vital, so understanding and wise, our memory of him is so vivid, that he will still answer us with a kindly twinkle in his eye. His writings in many fields are so rich in knowledge, wisdom, humour, and judgment that he is woven into the fabric of all that is best in medicine and its contacts with the world around it. In this wider sphere of influence this great man will wield his influence for good for many generations to come.

Sir Geoffrey came of seafaring ancestry with traditions of the good ship *Bounty* and of the Battle of the Nile in his veins. His father was a doctor, his mother a nurse, and he married a doctor. In his youth he was a cricketer and he followed the game with the utmost zest to his last days.

Attracted by the challenge of neurological surgery, he began his career in it under the stress of the battlefields of the first world war. An erudite and eminently practical surgeon, he always put his patients first. His wisdom sought their ultimate benefit in the fields of medical education, surgical training, and the fostering of research. His scientific prestige gained him the rare distinction of Fellowship of the Royal Society; and his guidance was sought as a member of the Medical Research Council. He pioneered modern neurological surgery, and a great part of its advancement over the past 40 years has come from him. His university created for him the first chair of neurological surgery in Britain. He founded and nurtured and guided the Society of British Neurological Surgeons, which has done so much for the cultivation of the science, craft, and comradeship of neurological surgery progressively in Britain, in Europe, and in the world. He had the unique honour of election to its presidency on two occasions, 1934–6 and 1954–6. Honours were showered upon him—social, professional, and learned—in his native land and in numerous overseas countries. He was a great ambassador of British culture and British medicine abroad.

Beyond this glory one always found the humane doctor—deeply concerned for his humblest patient—and the practical surgeon, profound in clinical knowledge, wise in judgment, skilled and sure in action. One always found the true friend, the good companion, the benevolent adviser. These qualities shone forth unfailingly during his last illness, which restricted his activities during the past year and whose hardships he met with courage, without complaint, and with gentle humour. Our deepest sympathy goes out to his family—his widow, his two medical sons, and his married daughter—and to his faithful secretary.

This great man is immortal. His name will be heard and his influence for good will continue through centuries of the future of medicine.

Dr. FERGUS R. FERGUSON writes: It is thirty-six years since I first had the opportunity to marvel at the gifts of Geoffrey Jefferson—his outstanding distinction, his clinical judgment, his wide knowledge of people—well and ill—and his ability to think deeply about almost any subject. Many will not know of the uphill battle he had, in the 1920's and 1930's, to get a place in which to sit and think, a bed in which to put a patient or a theatre in which to operate. In the later years, too, I used to feel that it was wrong if I saw him physically exhausted after a long operating session, when it seemed wiser that he should have been sitting in a congenial environment—pondering and reflecting—for one wanted to see so much the fruits of his labours.

It is indeed sad to know that we will never hear again that merry chuckle or see that waistcoat ripple which accompanied the few words or the sentence which so ably and so wittily summarized or caricatured the whole situation—be it a clinical problem, one in committee, or in any discussion. On the other hand, let us be grateful that we have known him for so long, and let us pay homage to one of the greatest medical thinkers of this century. So many are so quickly forgotten, but assuredly there is a permanent niche for this—in so many ways—unique man.

W. R. D. writes: The death of Sir Geoffrey Jefferson came as a great shock to us in Manchester. This loss of our most distinguished and beloved surgeon will not only be felt in his own town but throughout the world. "Jeff," as we, his friends and colleagues, called him, was a real character. His speech, his manner, his whimsical humour and turn of expression, his well-known idiosyncrasies endeared him to all. Those of us who had known him all his medical life and worked alongside him were in no doubt about his genius. There were times when he seemed to live in a world all his own. It was as if he looked into a space which was beyond us. The honours bestowed upon him, especially the F.R.S., of which he was very proud, indicated the place he held in the world of science. His last book, *Selected Essays*, was a triumph of 30 years' "thinking" and hard work. Widely travelled in America, Europe, and Russia, he was held in respect all over the world. His after-dinner speaking was unique and characteristic: he told me "timing" was the key. Illness dogged his footsteps for many years, but his determination and enthusiasm for his subject allowed him to rise superior to it.

I would, however, lay particular stress on his modesty, his kindness, and his humanity. I know of many poor patients whom he has operated upon, placed in a private home, and paid all fees out of his own pocket. Some he visited afterwards, even 50 miles away, in their own homes. Jeff never spared himself where a patient or friend was concerned. Surgeons, students, nurses, and patients were devoted to him. There was an aura about Jeff which one could feel but could not explain. We, his friends, mourn his passing. We shall never see his like again and we shall never forget him. He was a devoted husband and father and was proud of his two sons, who have already made their mark in the world of medicine and surgery. We offer the family our deepest sympathy.

A. E. RICHMOND, C.B.E., M.R.C.S., L.R.C.P. D.P.H., D.T.M.

The obituary of Brigadier A. E. Richmond was published in the *Journal* of January 21.

A. M. C. writes: At the outbreak of the second world war I met Brigadier Richmond while I was mobilizing a Hygiene Section to take over to France. His initial action was characteristic of him, for, learning that I was a "new boy," he went out of his way to give me special help and training. Later during the war he became D.D.H., M.E.F., so I came under his command and was in close touch with him until the end of hostilities. During this time I grew to realize Arthur Richmond's sterling qualities. He was such a quiet, modest, unassuming person that at first you did not realize his drive and ability to get to the bottom of a problem and to see it through. He not only inspired but gave loyalty. A reader of *Rats, Lice, and History* will appreciate the role of disease in military campaigns. There is no doubt that the "Desert Victory" was largely due to the activities of Brigadier Richmond, a fact that is only realized by those who saw his painstaking efforts to maintain the health of our troops in the M.E.F. Investigations immediately after El Alamein revealed that 40 to 50% of the enemy front-line troops suffered from excremental disease, whereas the incidence among our own troops was much lower. I am proud to have served under Arthur Richmond and to have gained his friendship. We shall all miss him, and our deep sympathy goes to his wife and son.

Medical Notes in Parliament

HEALTH SERVICE CHARGES INCREASED: £65m. MORE TOWARDS EXPANDING COST

[FROM OUR PARLIAMENTARY CORRESPONDENT]

The battle of the Health Service is joined. Government and Opposition are locked in bitter conflict on how current cost and potential development are to be met. The first clash on February 1 will be followed by the counter-attack of a censure motion on February 8; and the successive stages of necessary legislation will keep the battle raging until the Budget immediately after Easter widens the conflict along the whole front.

Expectations that changes in the financing of the Health Service were imminent were realized when Mr. ENOCH POWELL disclosed his intentions on February 1. "The cost of a number of items for which charges are made has increased substantially since the charges were last fixed, and it is proposed to adjust them," he said.

The New Proposals

This is what is to happen.

Charges for dentures will be increased by amounts ranging from 5s. to 15s. Charges for treatment will not be raised. Children and expectant and nursing mothers will be relieved in future of the present charges for dentures. [Current charges are £4 5s. maximum for more than one denture; single denture, one to three teeth £2, four to eight £2 5s., nine and over £2 10s. The charge for treatment is £1, or the full cost if less than £1.]

Charges for spectacles will be increased by 5s. a pair, with a higher charge for bifocal and multifocal lenses. Children aged 10 and over will no longer be charged for spectacle lenses in any type of N.H.S. frame. [Present charges are 10s. each for lenses, and 5s. 10d. to 17s. 8d. for frames, according to type.]

Maximum charges for amenity beds in hospitals in England and Wales will be doubled. [The present charge is 12s. a day for a single room, or one-half the cost, whichever is less; 6s. a day for a bed in a small ward, or one-quarter of the cost.]

Prescriptions will cost 2s. an item from March 1. "We believe this measure is necessary, along with others already taken or in hand, to restrain the increase in the cost of the pharmaceutical services," said Mr. Powell. [The present charge is 1s. an item. It was originally 1s. a form, irrespective of the number of items.]

Welfare foods will be sold at prices to cover the cost from June 1—approximately 1s. 6d. for orange juice, 1s. for cod-liver oil, and 6d. for vitamin tablets. [Orange juice is supplied at 5d. a bottle. Cod-liver oil and vitamin tablets are free.]

The Health Service contribution is to be increased in July on the basis of 1s. a week for an employed man—10d. from the employee and 2d. from the employer—with appropriate changes for other groups. [The current Health Service component in the weekly contribution is 2s. 8½d. for an employed man, 2s. 0½d. for a woman, and 1s. 4½d. for a boy or girl, plus 7½d. from the employer in each case.]

The effect of all these measures, Mr. Powell stated, will be to reduce the net Health Estimates by about £50m. in 1961–2 and about £65m. in a full year. [About £49m. of this will come from the increased yield of the N.H.S. contribution, £12½m. from the doubled prescription charge, £1m. from the dental charge, £1,600,000 from the optical charge, £125,000 from the amenity beds, and £1½m. from the welfare food charges.]

Expansion in Danger

The justification for these increases was contained in the opening passages of the Minister's announcement, in which he stated that the net Estimates of the National Health Service and the Health Departments for the next financial year indicated an increase of 11% over those for this year. This followed upon an increase of over 8% this year and over 6% the year before. The total cost in the current financial year was about £867m., of which £663m. would be met by the Exchequer.

The Government were determined, continued Mr. Powell, to continue their policy of developing the Health Service, and in particular to carry through a long-term programme of modernizing our hospitals. These objects would be in danger if the cost of the Service to the Exchequer were allowed to go on increasing at so high a rate. The Government had therefore decided that certain steps to reduce the net estimates were necessary.

Opposition Hostility

It was on to this general principle of safeguarding development that the Minister hung his detailed proposals. It was to both principle and detail that the Opposition immediately pronounced hostility. Mr. KENNETH ROBINSON (St. Pancras North), on the eve of his appointment as "shadow" Minister of Health, condemned the charges as the biggest single assault on the whole principle of the Health Service, and a very serious inroad into the Welfare State. This increase in the N.H.S. contribution was a poll tax, falling most heavily on those less able to bear it. The Department had been advised that it would probably save money by abolishing the prescription charge altogether. To make a charge for welfare foods was mean. Finally, and bitterly, was a backward look at Mr. Powell's resignation from the Treasury three years ago. "Does he not think he would have done better to return to the back benches rather than agree to these charges?" Mr. POWELL flung that back with some heat. "I should have been betraying my trust if I had agreed to an increase in the budgetary cost of this Service, for it would inevitably have resulted in the development of the Service itself having to be curtailed or limited if these steps had not been taken." The proportion of average earnings to be collected in future through the health insurance stamp would not be appreciably greater than in 1948, he said.

A former Conservative Minister of Health, Mr. R. H. TURTON (Thirsk and Malton, Con.) also looked back, but a good deal further. When Sir Stafford Cripps imposed a ceiling of £400m. on the Service, he observed, he did much to retard its development. "We do not want that to happen again." Miss M. HERBISON (Lanark, Lab.) accused the Minister of having incited the Cabinet to put up the charges, and mentioned possible hardship arising from them.

Relieving Hardship

Mr. POWELL renewed the pledge given by his predecessor to look at any circumstances of possible hardship brought to his notice. (He had included in his original announcement an assurance that arrangements for the refund of prescription and other charges would remain in force and would be extended to include the free issue of vitamin supplements.)

In two sentences he summarized the Government's case. "I believe it is recognized that, with the present rate of increase of the cost of the Service to the Exchequer, the alternative is between the measures I have announced and a limitation of the expansion of the Service. If the House or the country has to choose . . . I have no doubt what the decision will be." Mr. G. NABARRO (Kidderminster, Con.) presented price stability and the growth of the national economy as the fundamental considerations, which prompted Mr. POWELL into replying: "There is an inevitable connexion between the national income and what can be deployed on a particular service. It is the duty of those responsible for the respective services to see that the priorities are preserved. By measures of this kind we ensure that the essential and growing elements of the Health Service can go forward unimpeded."

It was left to Mr. HAROLD WILSON (Huyton, Lab.) to make the customary inquiry why all this had not been taken out of pharmaceutical profits, and to promise the Conservative Party its bitterest fight if it turned out in the Budget that these measures were to be associated with surtax or similar concessions.

MEDICAL EXAMINATION OF PRISONERS

[FROM OUR PARLIAMENTARY CORRESPONDENT]

Mr. L. ABSE (Pontypool, Lab.) complained on February 2 that the mental examination before trial of persons accused of murder was being abused to the prejudice of the defence. In so doing he talked about "lynch-law attitudes" invading the police-station and the court-room; of accused persons being "brain-washed by a prison officer" so that the prosecution might obtain evidence for its benefit and to the detriment of the defence; and of the danger of verdicts of murder being given as a consequence of "clandestine investigation conducted in a prison cell between a doctor and a patient." The Prison Commissioners, Mr. Abse alleged, irrespective of whether or not it was the intention of the defence to raise the question of insanity, were insisting on the right of their prison medical officers to attempt to interrogate every and any man accused of murder and then to send the reports so obtained to the Director of Public Prosecutions. This was not an academic issue. He was satisfied that cases had occurred in which if the accused had not had the brain-washing report extracted from him by the prison medical officer the jury would in all probability have brought in a verdict of manslaughter and not of murder. He urged that the Home Secretary should get back to the original intention—namely, the report should only be obtained if mental incapacity was to be raised by the defence. Nowadays that was only if a defence of insanity or of diminished responsibility was to be pleaded.

Mr. Abse also suggested that the action of the Prison Commissioners in insisting that their employees, the prison medical officers and the temporarily hired outside psychiatrist, must go on attempting to interrogate and medically observe any man charged with murder—without the man's or his legal adviser's consent—and then hand over a report to the D.P.P., was requiring their medical officers to be flagrantly in breach of the Hippocratic Oath, as well as the Judges' Rules.

Not "Brain-washing"

Mr. DAVID RENTON, Under-Secretary at the Home Office, took exception to the term "brain-washing" as quite inappropriate to an established practice and unfair to people in the public service doing their duty, and invited Mr. Abse to withdraw the allegation.

Mr. ABSE said that, whether one called it psychiatric investigation or brain-washing, what occurred was that they [psychiatrists] were investigating the man's brain and they were endeavouring to obtain all the information they could out of him.

Mr. RENTON replied that he would not bandy words and phrases any more. He would simply say that it had for a very long time been the established practice that a person in prison awaiting trial on a charge of murder should receive a medical examination as to his physical and mental condition. It was true that he might be seen not merely once but quite frequently, but to say that he spent days being placed under rigorous cross-examination was very far from the facts. Mr. Renton argued that there were two principal reasons why medical reports should be obtained. First, the defence might wish to raise a plea of insanity, diminished responsibility, unfitness, or some other defence, and must be properly armed with adequate medical evidence; and, second, if such evidence was made available it should be placed in the hands of the court. The practice had been considered and affirmed by the Royal Commission.

Where Mr. Abse possibly had reason to doubt the practice, said Mr. Renton, was when copies of the report reached the prosecution. As a matter of practical convenience it had been found desirable to let the D.P.P. have a copy of the report. If there was a medical report available on a man's mental condition the best way of ensuring that it reached the court was that the D.P.P. should be told there was a report and should know of its contents. The complaint made by Mr. Abse was the only one that had been brought to notice that the practice was in any way unsuitable. The experience of those who had seen it at work would be to accept it as practice which was not abused and which in a vast number of cases had been to the benefit of the accused.

QUESTIONS IN THE COMMONS

Scottish Hospital Building

The SECRETARY OF STATE FOR SCOTLAND announced on February 1 that a provisional selection of major hospital projects that should if possible be started during the next 10 years had been agreed with the Scottish regional hospital boards. Expenditure on hospital building in 1962–3, subject to the economic situation and the voting by Parliament of the necessary money, would rise to a provisional figure of £4,800,000. He had also made regulations raising from £30,000 to £60,000 the maximum cost of building projects which hospital boards could undertake without his prior authority.

Mr. MACLAY then gave the following list of major schemes due to start in the period up to 1964–5.

Western Region

Western Infirmary, Glasgow, rebuilding. Dunoon Cottage Hospital, replacement. Victoria Infirmary, Glasgow, new out-patient department. Southern General Hospital, Glasgow, new casualty clinic. Glasgow Dental Hospital, extension. Glasgow Royal Infirmary, extension. Vale of Leven Hospital, new maternity unit. David Elder Infirmary, Glasgow, new maternity unit. Royal Samaritan Hospital, Glasgow, new maternity unit. Bellsdyke Mental Hospital, Larbert, extension. Camiesburn Hospital, Glasgow, new plastic surgery unit. Southern General Hospital, Glasgow, new neurosurgery unit.

South-eastern Region

Edinburgh Royal Infirmary, rebuilding. Western General Hospital, Edinburgh, rebuilding. Victoria Hospital, Kirkcaldy, second extension. Randolph Wemyss Hospital, Buckhaven, extension.

Eastern Region

Ninewells, Dundee, new teaching hospital. Maryfield Hospital, Dundee, rebuilding and extension. Dundee Dental Hospital, extension.

North-eastern Region

Aberdeen Royal Infirmary, extension.

Northern Region

Portree, Skye, new hospital. Belford Hospital, Fort William, replacement. Broadford Hospital, Skye, extension.

The remaining schemes will be announced as they reach the appropriate stage of definition.

G.P.s on Hospital Boards

Mr. ELWYN JONES (West Ham, South, Lab.) asked the Minister of Health on January 30 what steps were being taken to ensure that each regional hospital board had an adequate number of general-practitioner governors. Mr. POWELL told him that regional hospital boards already had one or more members who were general practitioners.

Mr. R. E. PRENTICE (East Ham, North, Lab.) asked why no general practitioners had been appointed to the boards of governors of two of the three teaching hospitals in the North-east Metropolitan Region—namely, St. Bartholomew's and Moorfields; whether the Minister was aware that the important connexions between the work of general practitioners and the teaching hospitals made such appointments essential; and what steps he proposed to take in this matter. Mr. POWELL pointed out that three-fifths of the governors were nominated by the bodies specified in the Act. In choosing the rest he must consult the local authorities and other bodies concerned, and ensure a reasonable proportion of lay members; but where there was no general practitioner, he would certainly consider

appointing one, wherever the balance of the factors to be taken into account made it possible.

Hospital Medical Staffing

Mr. KENNETH ROBINSON asked the Minister whether he had received the report of the Platt Working Party on Hospital Medical Staffing; and when it would be published. Mr. POWELL: Yes. Probably before the end of March.

Medico-Legal

INQUEST: DEATH DURING PYELOGRAPHY

An inquest was held recently on a man who collapsed and died after the injection of a radio-opaque dye for intravenous pyelography. Death from this cause was described in evidence as being very rare. A verdict of death by misadventure was returned.

The patient, aged 61, had been referred for radiological examination of the urinary tract. He had complained of left-sided abdominal pain and had signs of prostatic obstruction. He did not complain of anything else, except occasional coughing, when questioned in the *x*-ray department by the senior hospital officer in radiology. He was given an intravenous injection of 20 ml. of 45% "hypaque" (Bayer Products) in the normal manner. The injection was completed in a little over two minutes. Two or three minutes later the patient suddenly complained of lower abdominal pain, began to sweat, and became restless. Rashes appeared on both legs. He then became cyanosed and almost pulseless. Nikethamide, adrenaline, oxygen, and artificial respiration were ineffectual, and the patient died. The senior house officer who gave the injection said that it was the first time he had met such a case in four years' experience.

A consultant pathologist, who carried out a post-mortem examination, said that the most striking feature was an almost complete absence of blood in the heart and great vessels. The blood had presumably pooled in the periphery. There was a slight degree of inflammation of the trachea and more so of the major bronchi, with moderate mucous exudate. Inflammation of the small bronchi was quite marked. The cardiovascular system was not abnormal for a man aged 61. There was a benign hypertrophy of the prostate; otherwise the genito-urinary system and abdominal viscera were normal. In the pathologist's opinion death was due to vasomotor collapse due to the injection of hypaque. A contributory cause was tracheo-bronchitis.

A medical representative of Bayer Products Ltd., the makers of hypaque, asked by the coroner whether there had been any similar occurrences, said that there had been a similar one three years ago, but he had no personal experience of such a case. The accident rate was very low indeed. He had no figures, but it was perhaps one in five million, and he knew of only one death since the product was introduced in 1956.

Universities and Colleges

UNIVERSITY OF GLASGOW

The following degrees were conferred on January 14:

M.D.—*J. E. Lunn, *E. J. R. Primrose, J. M. Wallace.

M.B., CH.B.—E. I. Akwule, A. Alexander, L. A. Alli-Balogun, Freda Berry, J. M. Blaikie, A. Borckini-Dada, D. MacG. Brown, C. C. A. Campbell, S. Campbell, A. Clark, A. M. Clark, J. W. H. Crosbie, Jessie S. Cubie, J. J. Fitzpatrick, G. G. Forrest, R. G. Gibson, J. Kerr, Evelyn M. E. Laidlaw, G. D. Lewis, C. A. P. Maley, Patricia M. Menzies, J. Nicol, Irene F. D. Patterson, J. G. R. Robertson, A. P. Robinson, Marion E. Russell, S. D. K. Soni, I. D. Walters.

*With commendation.

DIPLOMA IN INDUSTRIAL HEALTH.—G. Groves.

DIPLOMA IN CHILD HEALTH.—Shirley E. Willis.

After the meeting a Hunterian Lecture was delivered by Professor F. G. Ellis on "The Aetiology and Treatment of Achalasia of the Cardia."

UNIVERSITY OF ST. ANDREWS

At a Graduation Ceremonial held on January 13 the following degrees were conferred:

M.B., CH.B.—Eileen J. Georgeson, J. M. Grainger, J. M. N. Hilton, M. F. Kirkman, Mary H. Drylie (or Mellon), D. Rider, H. J. Royall, D. T. Williams.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

At a quarterly comitia of the College held on January 26, with the President, Sir Robert Platt, Bt., in the chair, Dr. Kenneth Robson was elected Registrar of the College and also a representative on the committee of management and a member of the standing joint committee of the three Royal Colleges.

Dr. H. A. Burt was appointed as College representative on the Council for Professions Supplementary to Medicine; Sir Allen Daley as representative to the congress of the Royal Society of Health to be held at Blackpool from April 25 to 28, 1961; and Lord Amulree as representative on the council of the Queen's Institute of District Nursing. Dr. E. R. Boland, Dr. T. C. Hunt, and Dr. J. B. Harman were reappointed as College representatives on the Central Medical Recruitment Committee for 1961–2; and Professor A. A. Moncrieff as representative on the Central Midwives Board.

The award was announced of the Frederick Murgatroyd Memorial Prize to Dr. J. C. Waterlow, of the Medical Research Council's Tropical Medicine Metabolism Research Unit.

Membership

The following candidates, having satisfied the Censors' Board, were elected Members of the College:

Captain D. Barltrop, R.A.M.C., L. L. Basta, E. R. Beck, L. J. Bellin, F. R. Berridge R. Carlisle, D. J. Deller, Ferdinand Po-Tun Fok, K. P. Goldman, L. K. Hemsi, K. N. Jeejeebhoy, J. H. Jones, F. O. MacCallum, J. L. McClure, W. O. McCormick, J. S. Malpas, Alina T. Piesowicz, Betty L. Priestley, A. J. Ralston, H. A. Rees, J. A. P. Trafford, A. R. Warner, H. Westbury.

Licences

Licences to practise were conferred upon the following 134 candidates who had passed the final examination in medicine, surgery, and midwifery of the Conjoint Board and who had complied with the by-laws of the College:

Betty J. Allen, Kathleen M. Allsopp, K. Ametewee, W. J. Appleyard, E. Aubrey, M. D. Awty, J. P. Barker, Judith A. Barnard, A. C. Bird, C. G. Bird, J. R. Blackburn, J. M. Blair, Mavis A. Bonnard, J. C. Bouch, B. S. Bowers, S. S. Brook, J. Brown, J. M. Carey, E. J. P. P. F. Caruana-Galizia, Judith M. Chawner, Chee Chin Cheang, J. E. Chorley, J. S. H. Cohen, M. B. Cohen, S. L. Cohen, Christine M. Colley, J. M. Collis, G. E. Conn D R. Dadge, D. G. Daniel, E. A. Daniyan, M. H. Devereux, Margaret J. Dixon, P. J. Doust, P. A. Draper, C. D. M. Drew, A. M. Driscoll, J. Dunlop, Adrienne Edmonds-Seal, A. A. Eisen, R. H. Eleady-Cole, C. V. Everard, M. J. Farr, G. W. Gamlen, A. F. Gazdar, Vera Gellert, J. Gerwat, Kathleen M. Goodwin, A. D. G. Gordon, Judith Greenwood, B. W. Griffiths, D. J. Grundy, J. D. Hailstone, B. E. C. Hale, J. F. Hallpike, J. A. Hanne, P. S. E. G. Harland, N. P. A. L. Harper, D. J. Hatch, Penelope B. Hewitt, Lee Ho, Barbara J. Horrell, D. C. Hosgood, D. A. Jack, Anne B. Kenshole, Heather S. Kerr, Penelope J. Key, M. H. King, E. K. Korley, R. G. C. Lett, Cynthia N. A. Levett, Lew Min Li Saw Hee, Doris Boe-Eng Looi, I. J. McCallum, Micheline M. Maher, A. Maiden, J. K. C. Maile, P. G. Mann, Cynthia M. Marcon, E. S. Marsden, A. Martin, J. D. Matthew, Helen R. Miller, W. J. Modle, J. S. Moodie, J. Nsibambi, P. M. O'Driscoll, J. A. Ogyaadu, J. E. Oliver, R. A. Peebles, B. D. Perrott, M. C. Pietroni, Ilfra J. Pink, Margaret N. R. Pitt, W. P. Povey, A. Prestwich, W. E. M. Pryse-Phillips, D. Pye, D. C. Quantock, M. C. Rallings, R. G. Rathbone, G. K. Renwick, R. G. Richer, C. C. Robertson, A. J. Russell, G. J. Samson, B. Shrivastava, A. C. F. Sjogren, D. H. Smith, E. A. Smith, T. N. Stanbridge, D. L. Stevens, R. Stilwell, N. Stoddart, M. W. Thakre, J. G. B. Thurston, Katharine H. L. Todd, Rosemary A. Underhill, J. P. Vaughan, Sheila L. Waller, M. Watson, A. D. Wedderspoon, T. K. Wheeler, E. D. G. Williams, G. P. Williams, C. J. F. Ll. Williamson, P. J. Winter, Ann J. Wiseman, J. B. Wood, R. J. Worden, Ann F. Worsfold, Jane E. Yeo, E. Young, S. Zador.

Diplomas

Diplomas in Anaesthetics, in Medical Radiodiagnosis, in Medical Radiotherapy, and in Pathology were granted, jointly with the Royal College of Surgeons of England, to the successful candidates whose names are printed below in the report of the meeting of the Royal College of Surgeons of England, held on January 12.

The following diplomas were granted, jointly with the Royal College of Surgeons of England, in addition to those printed below in the report of the meeting of the Royal College of Surgeons of England held on January 12:

DIPLOMA IN LARYNGOLOGY AND OTOLOGY.—K. W. Murphy.

DIPLOMA IN PSYCHOLOGICAL MEDICINE.—H. C. Ferguson.

DIPLOMA IN PUBLIC HEALTH.—M. B. Todd.

DIPLOMA IN TROPICAL MEDICINE AND HYGIENE.—M. A. Mirza.

The following diplomas were granted, jointly with the Royal College of Surgeons of England:

DIPLOMA IN CHILD HEALTH.—Shirley E. Willis.

DIPLOMA IN INDUSTRIAL HEALTH.—A. H. Akhand, B. Black, T. D. Browne, T. W. Carrick, G. W. Danger, A. Das Gupta, M. T. Fernandes, G. Groves, J. S Horner, G. K. M. Khomo, N. Leitch, A. D. Macdonald, J. W. G. McDougall, W. G. D. Murray, D. G. Noble, S. E. Onejeme, M. J. Saldanha, W. D. Smith, M. B. Todd.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

At a meeting of the Council of the College held on January 12, with Sir Arthur Porritt, President, in the chair, Lieutenant-Colonel J. C. Watts was admitted as the joint Professor of Military Surgery in the Royal Army Medical College and the Royal College of Surgeons.

Mr. G. T. Hankey was presented with the John Tomes Prize for the period 1957–9 for clinical research, and Dr. Margaret A. Branthwaite and Dr. A. Garendran were awarded the Nuffield prizes for anaesthetics.

A resolution of condolence was passed on the death of Sir Ernest Finch (past Vice-President).

Mr. W. Gissane was appointed the Robert Jones Lecturer; Dr. G. S. W. Organe, Joseph Clover Lecturer for 1962; and Dr. Frank Stansfield was reappointed Bland-Sutton Lecturer for the period 1960–3.

It was agreed that the next annual meeting of Fellows and Members be held in Sheffield on Friday and Saturday, November 24 and 25, 1961.

A Diploma of Fellowship was granted to G. V. Shead.

A Diploma of Membership was granted to E. S. Marsden.

Diplomas were granted, jointly with the Royal College of Physicians of London, as follows:

DIPLOMA IN LARYNGOLOGY AND OTOLOGY.—J. Atkins, M. J. Boyle, W. G. Edwards, K. P. Ferris, B. S. Gill, H. J. Griffiths, C. P. Gyaw, S. Wahaj-ul Hasnain, A. V. Hayes, S. R. Hilmi, Maung San Hla, J. McG. Jackson, S. C. Jayarajah, M. G. Jog, M. R. Landeg, K. M. Mathen, T. M. O. Morris, D. R. Owen, V. Ramachandra, Thar Hlaing, W. N. Tucker, D. S. Wijeyaratne, I. I. Wilson, R. A. Yorston.

DIPLOMA IN ANAESTHETICS.—N. Ahmad, P. C. Anderson, Mary E. Ashworth, R. Basu, E. F. Battersby, D. de G. Binns, Joyce Bourne, D. J. Bowen, C. R. Brown, Barbara J. Burbridge, M. Z. Butt, R. A. Cahi, Jill M. Cary, S. L. Chanda, J. M. Chokashi, G. E. Clews, Rosemary McV. Coffey, D. Cohen, W. G. Conn, J. H. Croft, A. Cunningham, J. S. Davis, D. E. Day, A. V. Dreosti, Christine P. Elgood, T. L. Fraser, Elizabeth P. Gibbs, S. D. Giddy, R. T. Glen, R. W. Griffin, P. B. Hardwick, W. R. Heaton, W. R. Hesson, Margaret A. Hickey, A. L. Hovenden, T. A. Hussell, Marjory M. R. Jukes, Q. L. D. Kalpage, Sheila Keswani, K. L. King, Anna W. Koeller, Audrey M. Lake, R. W. Lamb, R. A. Lea, E. G. Leonard, T. C. McAslan, D. J. F. Macdonald, Roma McDonald, R. C. Macfarlane, J. G. Mar, Annabel J. M. Mason, Nalini V. Mehta, Jean Moffatt, Kathleen M. Moore, A. B. Muiholland, C. W. A. Murray, Jennifer L. Murray, U. S. Mushran, Muthu Navaneetham, B. J. O'Neil, N. Paymaster, R. K. Pears, Eve M. Pitt, D. A. Pottinger, Valerie J. Prior, L. R. Redman, Marion E. Richardson, T. Riley, Jean McC. Ritchie, D. G. I. K. Russell, Dolly T. Salami, Felicity H. Sambrook, W. J. W Siddall, J. Southern, E. B. Steffenssen, Pamela M. Stracey, A. G. Tetlow, Gaynor Thomas H. R. Turner, U Tin Maung, J. F. Viljoen, J. D. Villiers, K. P. Wilson, R. C. Young.

DIPLOMA IN MEDICAL RADIODIAGNOSIS.—Kamla Bery, W. A. Brown, V. Cope, J. D. Craven, J. S. H. Davidson, J. A. Gleeson, J. H. Highman, Wei-Yik Paul Huang, W. A. John, A. M. Kasem, J. P. Lavender, K. W. Lavers, Leila Liebster, Mary B. B. McGregor, M. A. Mehran, H. L. Miller, M. A. B. Ogakwu, B. W. Petty, V. V. S. Pratapa Rao, J. H. Roberts, E. J. Roebuck, H. W. P. Rooke, S. P. Sarkar, H. H. Shawdon, J. S. Sodhi, U Ko Ko, J. M. Welchman, F. R. Wright, S. B. Zainy.

DIPLOMA IN MEDICAL RADIOTHERAPY.—Joan W. Baker, Pui-Sek Daniel Chan, N. C. N. Cooray, W. Duncan, N. V. Hawkins, D. J. Mahy, J. A. G. Matthews, Maung Mya Thin, M. A. Siddiqui, Jean F. Stafturth, A. Sudarsanam, I. D. H. Todd.

DIPLOMA IN PSYCHOLOGICAL MEDICINE.—W. D. Addis, J. E. Barclay, L. Barclay, A. Bhattacharya, W. D. Boyd, P. K. Bridges, P. B. Buckshey, N. G. Chakraborty, Joan R. Christison, N. Crook, M. H. de Groot, J. A. Dew-Jones, G. O. Dubourg, D. Eccleston, M. Ekdawi, B. H. Fookes, P. L. G. Gallwey, B. M. Groden, P. Hall, P. Harper, I. N. S. Heald, J. H. Henderson, R. N. Herrington, H. M. Holden, J. A. Ireland, T. E. Lear, Veronica H. Longman, E. C. MacLeod, D. H. Marjot, J. M. Mielczarek, G. McK. J. Nicholl, J. H. Padel, R. Padmasini, T. A. A. Pearce, F. C. S. Pearson, J. D. Pryce, R. Seymour-Shove, M. S. Spelman, O. N. Srivastava, J. A. Stewart, K. Stewart, J. D. Stirland, J. R. Unwin, J. J. Waldron, C. B. Whittaker, D. H. Yates.

DIPLOMA IN PATHOLOGY.—J. D. Barrie, E. C. Christian, R. Gillett, Alice B. E. Gray, Beryl Jameson, B. K. Jha, J. R. Rawstron, K. Zahur-Ud-Din.

DIPLOMA IN PUBLIC HEALTH.—A. H. Akhand, B. C. Bardalai, Mary K. Astin, M. A. Baddoo, J. R. F. Boger, Jean Buchanan, P. B. Cook, J. N. Docherty, J. A. Dryden, P. M. Fea, K. W. H. Fenwick, M. T. Fernandes, J. E. J. Hurman, R. G. Isaac, Shirley Jesop, H. H. John, D. T. Jones, K. S. Laungia, J. A. Moffitt, J. R. P. Murley, B. M. Nolan, R. M. Oliver, P. L. Ray, P. Sukavachana.

DIPLOMA IN TROPICAL MEDICINE AND HYGIENE.—A. A. Ahmad, A. Coady, D. F. Conway, R. J. Givans, P. C. C. Pitt, H. Rahman, M. E. Wable.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS

At a meeting of the Faculty held on January 9, with the President, Dr. J. H. Wright, in the chair, the following were admitted Fellows of Faculty *qua* surgeon: R. S. Barclay, G. T. Bhopatkar, A. G. Hutchison, A. G. Kilcoyne, T. S. Mann, T. C. White.

CONJOINT BOARD IN IRELAND

The following candidates were successful at the recent final examinations held under the Conjoint Board in Ireland. On December 2 the Licence in Surgery and Midwifery was conferred in the Royal College of Surgeons in Ireland and the Licence in Medicine and Midwifery in the Royal College of Physicians of Ireland:

Edith M. B. Drohan, M. T. R. Collins, E. Curran, I. G. Fleming, B. E. Gittens, C. F. Kelly, Kim Lan Lim, P. Lowe, J. Lutchmun, H. Morris, Delia T. McCartan, S. Naidoo, P. D. O'Brien, S. A. Odei, P. J. O'Grady, O. Olasimbo, D. A. J. O'Neill, H. Sanhaie.

Vital Statistics

Influenza

During the week ended January 28 influenza was still prevalent in parts of the Midlands and the North West and in the West Riding of Yorkshire. Isolation of influenza virus A2 have been reported from all these areas and also from other parts of England. Deaths from influenza numbered 699, nearly double the previous week's figure. In the corresponding week of 1960 influenza deaths amounted only to 43. 80% of the deaths have been in the three areas where influenza has been most prevalent, and 90% of them were in persons over 55 years of age. Deaths from pneumonia (1,614) increased by 16% over the previous week, and deaths from bronchitis (1,750) by 20%. New claims to sickness benefit rose from 268,913 during the week ended January 17 to 313,461 during the week ended January 24.

Infectious Diseases

Areas where numbers of notifications were high in the latest two weeks for which figures are available.

	Week Ending	
Dysentery	Jan. 21	**Jan. 28**
Devonshire	19	**18**
Exeter C.B.	18	**15**
Lincolnshire	9	**34**
Lincoln C.B.	0	**27**
Surrey	9	**50**
Woking U.D.	0	**21**
Godstone R.D.	0	**20**
Yorkshire West Riding	91	**138**
Colne Valley U.D.	11	**24**
Todmorden M.B.	3	**14**
Nidderdale R.D.	0	**19**
Rotherham R.D.	6	**14**
Glasgow	64	**99**
Measles		
Bedfordshire	250	**303**
Bedford M.B.	84	**123**
Durham	546	**621**
Essex	640	**809**
Harlow U.D.	210	**180**
Hampshire	368	**499**
Southampton C.B.	85	**141**
Lancashire	1,827	**1,776**
London	1,087	**1,552**
Middlesex	439	**647**
Willesden M.B.	111	**181**
Oxfordshire	175	**243**
Oxford C.B.	131	**171**
Peterborough, Soke of	68	**168**
Warwickshire	552	**664**
Birmingham C.B.	325	**357**
Yorkshire East Riding	170	**246**
Kingston upon Hull C.B.	146	**222**
Yorkshire West Riding	1,111	**1,315**
Sheffield C.B.	91	**202**
Glamorganshire	576	**691**
Swansea C.B.	204	**207**

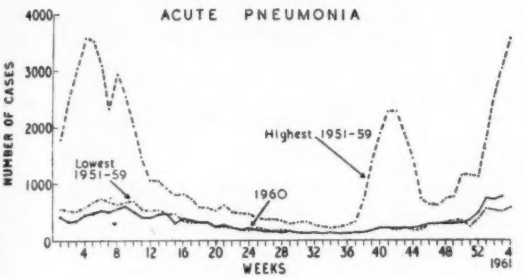
B.C.G. Vaccination of Schoolchildren

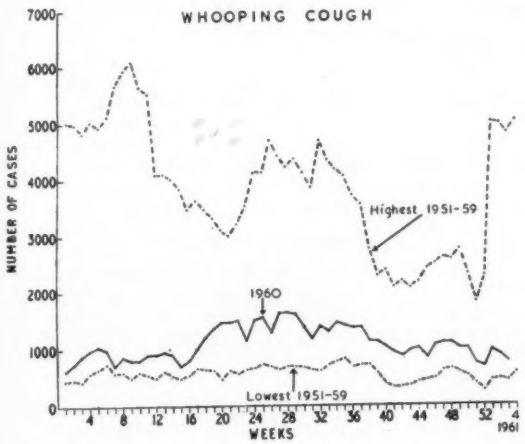
Local health authorities may now offer B.C.G. vaccination to schoolchildren aged 10 and over. Up till the present B.C.G. vaccination has been offered to children aged 13 and over. In a circular (6/61) explaining the new arrangement

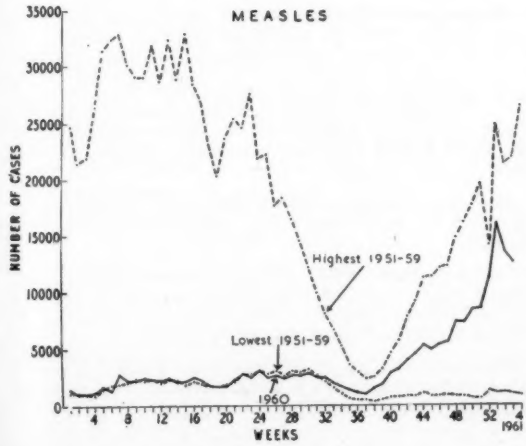
the Ministry of Health states that it is not the intention to extend B.C.G. vaccination to all children between 10 and 13. But if a local authority thinks there is risk of children developing tuberculous infection during their later years in school they will now be able to offer B.C.G. vaccination at an earlier age.

Graphs of Infectious Diseases

The graphs below show the uncorrected numbers of cases of certain diseases notified weekly in England and Wales. Highest and lowest figures reported in each week during the years 1951–9 are shown thus ------, the figures for 1960–1 thus ———. Except for the curves showing notifications in 1960–1, the graphs were prepared at the Department of Medical Statistics and Epidemiology, London School of Hygiene and Tropical Medicine.







INFECTIOUS DISEASES AND VITAL STATISTICS

Summary for British Isles for week ending **January 21** (No. 3) and corresponding week 1960.

Figures of *cases* are for the countries shown and London administrative county. Figures of *deaths* and *births* are for the whole of England and Wales (London included), London administrative county, the 17 principal towns in Scotland, the 10 principal towns in Northern Ireland, and the 14 principal towns in Eire.

A blank space denotes disease not notifiable or no return available.

The table is based on information supplied by the Registrars-General of England and Wales, Scotland, N. Ireland, and Eire, the Ministry of Health and Local Government of N. Ireland, and the Department of Health of Eire.

CASES	1961					1960				
	Eng. & Wales	Lond.	Scot.	N. Ire.	Eire	Eng. & Wales	Lond.	Scot.	N. Ire.	Eire
Diphtheria ..	3	2	5	0	3	6	2	0	0	5
Dysentery ..	418	23	108	15	6	864	111	219	10	
Encephalitis, acute	3	0		0		3	0		0	
Enteric fever: ..										
Typhoid ..	2	0	0	0		0	0	0	0	
Paratyphoid ..	2	0	2(B)	0		3	0	0	0	1(B)
Food-poisoning ..	107	15	7	0		192	21	11	4	
Infective enteritis or diarrhoea under 2 years				15	23				13	20
Measles*	12,615	1087	417	225	305	1,669	16	32	8	9
Meningococcal infection	20	1	8	0	1	18	1	8	0	2
Ophthalmia neonatorum	26	4	3	0		32	5	4	0	
Pneumonia† ..	770	51	299	4	30	341	25	251	15	4
Poliomyelitis, acute:										
Paralytic ..	2	0	} 8	0		{ 4	0	0	} 0	1
Non-paralytic	4	0				1	0	0		
Puerperal fever§ ..	160	25	6	1		196	33	9	1	1
Scarlet fever ..	422	34	47	24	15	1,188	39	105	24	14
Tuberculosis: ..										
Respiratory ..	412	65	70	11		449	52	70	23	
Non-respiratory	53	5	12	3		54	3	4	10	
Whooping-cough..	759	42	92	12	34	882	89	196	12	101

DEATHS	1961					1960				
	Eng. & Wales	Lond.	Scot.	N. Ire.	Eire	Eng. & Wales	Lond.	Scot.	N. Ire.	Eire
Diphtheria ..	0	0	0	0	0	0	0	0	0	0
Dysentery ..	0	0		0		0	0		0	
Encephalitis, acute		0			0		1			0
Enteric fever ..	0	0	0	0		0	0	0	0	
Infective enteritis or diarrhoea under 2 years	14	0	1	0	2	5	0	1	1	0
Influenza	358	4	0	2	10	32	2	1	0	1
Measles		0	1	0	0		0	0	0	0
Meningococcal infection		1	0				0	1		
Pneumonia ..	1,384	68	30	28	36	763	57	33	19	14
Poliomyelitis, acute	4	1		0	0	1	0		0	0
Scarlet fever ..		0	0	0	0		0	0	0	0
Tuberculosis: ..										
Respiratory ..	} 114	12	} 5	{ 3	7	} 81	{ 2	7	0	3
Non-respiratory		1		2	0		0	0	0	0
Whooping-cough..	1	0	0	0	2	1	0	0	0	0
Deaths 0–1 year ..	350	39	36	7	23	335	27	41	5	15
Deaths (excluding stillbirths) ..	15,081	1077	730	190	331	12,249	940	711	160	175
LIVE BIRTHS ..	15,575	1362	1084	260	386	14,576	1193	1003	241	263
STILLBIRTHS..	328	26	20			303	26	31		

* Measles not notifiable in Scotland, whence returns are approximate.
† Includes primary and influenzal pneumonia.
§ Includes puerperal pyrexia.

Medical News

Personal Injury Law

A committee has been appointed to consider whether it is desirable to amend the law relating to the limitation of actions in cases of personal injury where the injury or disease giving rise to the claim has not become apparent in sufficient time to enable proceedings to be begun within three years from its inception. The members of the committee include Sir CHARLES DODDS, F.R.S., and Dr. ANDREW MEIKLEJOHN. Communications may be addressed to Mr. A. D. M. OULTON at the Lord Chancellor's Office, House of Lords, London S.W.1.

Committee on Health Education

The Joint Committee of the English and Scottish Health Services Councils on Health Education (see *Journal*, July 30, 1960, p. 403), of which Lord COHEN of BIRKENHEAD is chairman, is now ready to receive written evidence. This should be submitted by May 31 to one of the joint secretaries: Mr. W. N. JUDD (Ministry of Health, Savile Row, London W.1) and Mr. A. W. TAIT (Department of Health for Scotland, St. Andrew's House, Edinburgh 1).

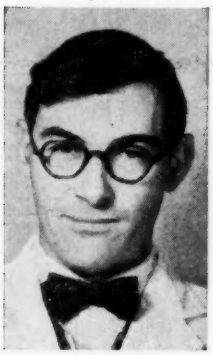
The Committee's terms of reference are: "To consider whether, having regard to recent developments in medicine, there are any fresh fields where health education might be expected to be of benefit to the public; how far it is possible to assess the results of health education in the past; and in the light of these considerations what methods are likely to be most effective in future."

Recruiting Midwives

A memorandum has been issued by the Ministry of Health which discusses ways of improving the staffing and organization of midwifery departments. Such improvements are regarded by the Minister of Health, Mr. ENOCH POWELL, as a matter to which hospital authorities should give early and concentrated attention. He has asked regional hospital boards and boards of governors of teaching hospitals to send him reports early next year on the progress made up to December 31 in recruitment efforts aimed at non-practising midwives and women who are not already registered nurses, in the employment of increased numbers of part-time midwives, in the review of maternity ward organization and procedures, and in the maintenance of good working relationship between medical, nursing, and midwifery staffs—all measures which the memorandum recommends.

Chair of Anatomy, University of Wales

Dr. J. D. LEVER, Fellow of Trinity College, Cambridge, and lecturer in anatomy at Cambridge University, has been appointed to succeed the late Professor J. S. BAXTER in the chair of anatomy at the University College of South Wales and Monmouthshire.



Dr. Lever, who is 37 years of age, was educated at Westminster School, Cambridge University, and St. Thomas's Hospital. After graduating M.B., B.Chir. in 1946, he became house-surgeon, then senior casualty officer, at Charing Cross Hospital. He served in the Royal Navy as a surgeon lieutenant R.N.V.R., after which he returned to Cambridge as assistant lecturer in anatomy in 1950. He proceeded to the M.D. degree in 1954 and was appointed lecturer in 1955. During the academic year 1954 to 1955 he was engaged in research on the electron-microscopic structure of the adrenal cortex at Washington University, St. Louis, Mo., U.S.A. In 1956 he was awarded the Symington Prize for original work in anatomy, and in 1957 was elected fellow of Trinity College, Cambridge His research has been devoted to the functional morphology of endocrine cells and includes investigations of the adrenal, parathyroid, endocrine pancreas, and the carotid body glomus cells. He has paid particular attention to the combined use of light and electron-microscopic methods in these cytological studies.

Noise Outside Hospital

Surgeons and staff of University College Hospital, London, are protesting strongly against the two motor-cycle parks which are being set up by St. Pancras Borough authorities in the narrow street between the main hospital and the private patients' wing. In a recent investigation on noise in hospitals by the King Edward Hospital Fund for London (see *Journal* annotation, December 31, 1960, p. 1946) the investigators found that the biggest single cause of complaint was not noise inside the hospital but traffic outside it.

Identifying Tablets and Capsules

A new edition of *The Chemist and Druggist* Tablet and Capsule Identification Guide has just been issued. The charts show each tablet and capsule in its actual colour and size, and include more than 900 items, about 150 of which are new. The guide is published in two forms: as a set of eight cards which can be hung on a wall (17s. 6d., post free), and as a brochure (8s. 6d., post free). It can be obtained from *The Chemist and Druggist*, 28 Essex Street, Strand, London W.C.2.

Sir Sik-Nin Chau

The name of the Hon. Sir SIK-NIN CHAU, C.B.E., M.B., B.S., D.L.O., D.O.M.S., was inadvertently omitted from the list of Birthday Honours published in the *Journal* last year. Sir Sik-Nin Chau, who received a knighthood for public services in Hong Kong, is a non-official member of the Executive Council of Hong Kong and has wide interests which include work for education and hospital and philanthropic organizations.

People in the News

Dr. C. P. BLACKER has retired from the office of administrative chairman of the International Planned Parenthood Federation and is succeeded by Mrs. MARGARET PYKE.

Dr. J. C. WATERLOW, director of the Medical Research Council Tropical Metabolism Research Unit, Jamaica, has been awarded the Frederick Murgatroyd Memorial Prize of the Royal College of Physicians of London.

COMING EVENTS

Association of Clinical Biochemists (Southern England and South Wales Region).—Annual general meeting, with papers and demonstrations, February 11, 2.30 p.m., St. Mary's Hospital, London W.2. Details from Honorary Secretary, Association of Clinical Biochemists, Middlesex Hospital, London W.1.

McGibbon Memorial Lecture.—Dr. A. RAE GILCHRIST, "Some Radiological Contributions to Cardiology," February 18, 2.30 p.m., Hall, Royal College of Physicians, Edinburgh.

Hunterian Society Oration.—Sir CECIL WAKELEY, "New Light on Hunter's Life and Achievements," February 20, 8.30 p.m., Livery Hall, Guildhall (Basinghall Street entrance).

Sherrington Lectures, Liverpool University.—Professor A. L. HODGKIN, F.R.S. (Royal Society Research Professor, University of Cambridge), "The Conduction of the Nervous Impulse," March 2, 3, 5.15 p.m., Large Lecture Theatre, New Medical School.

Institute of Urology.—Week-end course, "Medical Aspects of Renal Diseases," March 3–5. Details on advertisement p. 65.

B.M.A. Psychological Medicine Group.—Annual conference, with symposium, "First Impressions of the Working of the Mental Health Act, 1959," March 8, 2 p.m., B.M.A. House, Tavistock Square, London W.C.1.

Paediatric Meeting of Mediterranean Medical Union.—Alicante, Spain, June 25–28. Details from Dr. F. COROMINAS BERET, 360 Avda. Generalísimo Franco, Barcelona, Spain.

4th Congress of International Diabetes Federation.—Geneva, July 10–14. Details from Dr. BERNARD RILLIET, 4 Boulevard des Tranchées, Geneva, Switzerland.

7th International Congress of Otorhinolaryngology.—Paris, July 23–29. Plenary sessions: "Present State of Pathology and Treatment of Otosclerosis," "Relationship between Allergy and Infections of Nose and Bronchi," "Indications and Results After Five Years of Surgery and Radiotherapy combined with Surgery in Treatment of Cancers of Larynx and Hypopharynx." Details from Dr. H. GUILLON, 6 Avenue MacMahon, Paris 17, France.

NEW ISSUES OF SPECIALIST JOURNALS

The journals listed below are obtainable from the Publishing Manager, B.M.A. House, Tavistock Square, London W.C.1.

JOURNAL OF CLINICAL PATHOLOGY

Special issue in honour of Leonard Colebrook for his pioneer work on hospital cross-infection

Editorial.
Hospital Infection Yesterday and To-day. Mary Barber.
A Survey of Some Problems in Sterilization. Robert Knox.
Control of Infection in Hospital Wards. Robert Blowers.
Chemical Disinfection in the Prevention of Infection in Hospital. W. A. Gillespie.
The Cleaning of Ward Floors and the Bacteriological Study of Floor-cleaning Machines. J. G. Bate.
Sterilization by Dry Heat. E. M. Darmady, K. E. A. Hughes, J. D. Jones, D. Prince, and Winifred Tuke.
Prevention of Infection in Operating Theatres. R. A. Shooter and R. E. O. Williams.
The Surgeon's Autoclave. J. W. Howie.
Radiation Sterilization. E. M. Darmady, K. B. A. Hughes, Margaret M. Burt, Barbara M. Freeman, and D. B. Powell.
Sterilization by Ethylene Oxide. C. Kelsey.
Sterilization by Gas Ovens. E. A. K. Patrick, R. H. Wharton, K. Prentis, and A. G. Signy.
Disinfection of Bedpans. E. M. Darmady, K. E. A. Hughes, J. D. Jones, D. Prince, and Patricia Verdon.
The Organization of Central Sterile Supply Departments. J. D. Welch.
Preserving the Sterility of Surgical Dressings Wrapped in Paper and Other Materials. V. G. Alder and F. I. Alder.
Disinfection of Hospital Blankets with Synthetic Phenolic Compounds. I. M. Larkin, E. Y. Bridson, W. S. M. Grieve, and J. W. Gibson.
Skin Disinfection. E. J. L. Lowbury.
Efficiency Tests on a Series of Common Skin Antiseptics Under Ward Conditions. P. E. Verdon.
A Survey of Staphylococci Isolated in Hospital Practice. J. Bradley and M. J. Meyneil.
Staphylococci in Septic Fingers. O. Wesley-James and V. G. Alder.
Book Reviews.

Volume 14, No. 1. (Bi-monthly; £4 4s. annually.)

SOCIETIES AND LECTURES

A fee is charged or a ticket is required for attending lectures marked ●. Application should be made first to the institution concerned.

Monday, February 13

LONDON UNIVERSITY.—At No. 1 Lecture Theatre, University College Hospital Medical School 5 p.m., special university lecture in medicine by Dr. Arpad Csapo (New York): Nature Experiments on the Maintenance of Pregnancy.
POSTGRADUATE MEDICAL SCHOOL OF LONDON.—4 p.m., Dr. Brian Ackner: Emotional Reactions to Physical Illness.

Tuesday, February 14

BRITISH POSTGRADUATE MEDICAL FEDERATION.—At London School of Hygiene and Tropical Medicine, 5.30 p.m., Professor R. A. McCance, F.R.S.: Control of Acid-base Stability in the Newly Born.
CAMBRIDGE MEDICAL SOCIETY.—At Benson Hall, Magdalene College, Cambridge, 8.30 p.m., Dr. J. C. Kendrew, Ph.D., F.R.S.: Protein Structure.
MANCHESTER MEDICAL SOCIETY: SECTION OF SURGERY.—At Clinical Sciences Building, York Place, Manchester, 8 p.m., Symposium on Surgery of the Liver and Its Circulation. Openers, Mr. H. B. Torrance, Mr. A. G. Riddell, and Mr. A. R. Anscombe.
PLYMOUTH MEDICAL SOCIETY.—At Royal Naval Hospital, 8.30 p.m., clinical evening.
ROYAL COLLEGE OF SURGEONS OF ENGLAND.—4 p.m., Hunterian Oration by Sir Russell Brock: Museum, Research, and the Inspiration of Hunter.
ST. MARY'S HOSPITAL MEDICAL SCHOOL.—At Lecture Theatre, Wright-Fleming Institute, 5 p.m., Mr. J. A. Chalmers: The Vacuum Extractor.
WEST END HOSPITAL FOR NEUROLOGY AND NEUROSURGERY.—5.30 p.m., Mr. I. McCaul: Basal Ganglia Surgery.

Wednesday, February 15

CHILTERN MEDICAL SOCIETY.—At Chalfont and Gerrards Cross Hospital, 8.30 p.m., clinicopathological conference.
HARVEIAN SOCIETY OF LONDON.—At 11 Chandos Street, W., 8.15 p.m., Professor P. M. Daniel, Dr. R. W. Riddell, and Dr. Raymond Hierons: clinicopathological meeting.
INSTITUTE OF DERMATOLOGY.—5.30 p.m., Dr. G. C. Wells: Histochemistry of the Dermis.
INSTITUTE OF DISEASES OF THE CHEST.—5 p.m., Dr. E. H. Hudson: Cysts of the Lung.
INSTITUTE OF PSYCHIATRY.—At Harveian Society of London, 11 Chandos Street, W., 8.15 p.m., clinicopathological meeting. Short papers.
INSTITUTE OF UROLOGY.—4.20 for 5 p.m., Mr. A. W. Badenoch: Surgical Treatment of Simple Enlargement of the Prostate.
●NEW HEALTH SOCIETY.—At Ivanhoe Hotel, Bloomsbury Street, London W.C., 5.30 p.m., Dr. R. L. Llewellyn Smith: The Neuroses.
POSTGRADUATE MEDICAL SCHOOL OF LONDON.—2 p.m., Dr. A. A. Sharp: Defibrination Syndrome.

Thursday, February 16

BRITISH INSTITUTE OF RADIOLOGY.—8 p.m., The Mechanism at the Cardia. Speakers, Mr. B. B. Milstein, Dr. D. A. W. Edwards, and Dr. F. R. Berridge.
GUTHRIE SOCIETY.—At Meyerstein Theatre, Westminster Hospital Medical School, 8 p.m., Dr. C. Keith Simpson: Clues at the Scene.
INSTITUTE OF LARYNGOLOGY AND OTOLOGY.—5.30 p.m., Dr. N. F. C. Gowing: Role of the Pathologist and the Management of Laryngeal and other Neoplasms.
LIVERPOOL SOCIETY OF ANAESTHETISTS.—At Liverpool Medical Institution, 8 p.m., joint meeting with Liverpool Medical Institution. Subject: Role of the Anaesthetist in the Management of Intractable Pain. (1) Dr. J. E. Riding: Therapeutic Nerve Blocks. (2) Dr. J. W. Dundee: Recent Progress in Drug Therapy.
MANCHESTER MEDICAL SOCIETY: SECTION OF ANAESTHETICS.—At Staff House, Manchester University, 8 p.m., Dr. J. Greenan: The Cardio-oesophageal Junction. Dr. J. B. Montgomery: Some Aspects of Emergency Obstetrical Anaesthesia.
NUFFIELD ORTHOPAEDIC CENTRE.—At Wingfield-Morris Orthopaedic Hospital, Oxford, 8.30 p.m., Dr. W. M. Rigal: Studies on Chondrogenesis.
ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.—7.30 p.m., Symposium on Fungus Diseases. Contributors, Professor W. St. C. Symmers, Dr. Ian Murray, and Dr. Mary Marples. A discussion will follow.
ST. ANDREWS UNIVERSITY.—At Physiology Department Lecture Theatre, 5 p.m., Professor D. D. Reid: Aetiology of Bronchitis.
ST. GEORGE'S HOSPITAL MEDICAL SCHOOL.—5 p.m., Sir Paul Mallinson: postgraduate demonstration in psychiatry.
UNIVERSITY COLLEGE LONDON.—At Anatomy Theatre, Gower Street, W.C. 1.15 p.m., lunch hour lecture by Dr. F. C. Webb: Useful Micro-organisms.

Friday, February 17

BRITISH INSTITUTE OF RADIOLOGY.—2 p.m., radiobiology meeting.
BRITISH TUBERCULOSIS ASSOCIATION.—At 26 Portland Place, London W., 5 p.m., Discussion on Assisted Respiration. Dr. E. J. Moran Campbell, Clinical Physiological Considerations; Dr. P. Hugh-Jones, In Emphysema; Dr. F. Harwood Stevenson, In Respiratory Paralysis; Dr. M. K. Sykes, Post-operative; Dr. T. M. Wilson, After Trauma.
GALENICALS.—At Royal Fort, Bristol, 5.30 p.m., Professor R. C. Browne: My Experience in a University Department of Industrial Health.
●INSTITUTE OF DERMATOLOGY.—5.30 p.m., Dr. A. D. Porter: clinical demonstration.
INSTITUTE OF DISEASES OF THE CHEST.—5 p.m., Dr. K. M. Citron: clinical demonstration.
INSTITUTE OF LARYNGOLOGY AND OTOLOGY.—3.30 p.m., Mr. William McKenzie: Management of Chronic Suppurative Otitis Media. Clinical discussion for general practitioners.
POSTGRADUATE MEDICAL SCHOOL OF LONDON.—(1) 10 a.m., Mr. Rodney Smith: Anatomical and Physiological Considerations in Hepatic Resection. (2) 4 p.m., Professor J. Crofton: Sarcoidosis.
ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—3.30 p.m., Mr. Arthur Jacobs: Reconstructive Surgery of the Urinary Tract.
ROYAL COLLEGE OF SURGEONS OF ENGLAND.—5 p.m., Webb-Johnson Lecture by Dr. H. B. G. Robinson (Kansas City University): Effect of Operative Procedures upon the Dental Pulp.
ROYAL INSTITUTION.—9 p.m., Lord Adrian of Cambridge, O.M., F.R.S.: Dreaming.
SOCIETY OF MEDICAL OFFICERS OF HEALTH: SERVICES GROUP.—At Royal Army Medical College, 7.30 p.m., colour film concerning Accident Prevention: Hazard.

Saturday, February 18

NORTH OF ENGLAND OTOLARYNGOLOGICAL SOCIETY.—At Sheffield, 2 p.m., 41st ordinary meeting.

APPOINTMENTS

HOSPITAL FOR SICK CHILDREN, Great Ormond Street, London W.C.—C. Wastell, M.B., B.S., F.R.C.S., and A. Ramsay, M.B., Ch.B., House-surgeons.
LIVERPOOL REGIONAL HOSPITAL BOARD.—J. O. Doyle, M.D., M.R.C.P.I., Whole-time Assistant Venereologist to Newsham General Hospital and the Seamen's Dispensary; Joyce M. Galbraith, M.B., B.Ch., D.P.M., Whole-time Resident Assistant Psychiatrist and Deputy Medical Superintendent, Liverpool Hospital, Kingswood, Frodsham, Cheshire.

BIRTHS, MARRIAGES, AND DEATHS

BIRTHS

Craig.—On January 27, 1961, at City Maternity Hospital, Carlisle, Cumberland, to Kathleen (formerly Raine), M.B., and William S. R. Craig, B.M., a son—William Raine.

DEATHS

Ainscow.—On December 31, 1960, in hospital, James Ainscow, M.R.C.S., L.R.C.P., of Southport, Lancs, aged 86.
Babst.—On January 13, 1961, Edgar Babst, M.B., B.S., of 5 Park Villas, The Green, Wallsend-on-Tyne, Northumberland.
Boyd.—On January 8, 1961, at East Cornwall Hospital, Bodmin, Francis John Boyd, M.B., B.Ch., of Penmayne House, Rock, Cornwall.
Carter.—On January 9, 1961, William Hugh Carter, M.B., Ch.B., Lieutenant-Colonel, R.A.M.C., retired, of Rosslyn, Tain, Ross-shire.
Ellis.—On January 16, 1961, at St. Mary's Hospital, London W., Mary Jenny Lake Ellis (formerly Taylor), M.B., B.S., of Kew, Surrey.
Fowler.—On December 9, 1960, Edgar Francis Fowler, M.B., of Auckland, New Zealand.
Maclean.—On January 10, 1961, at Hill House, Park Road, Kenley, Surrey, Madge Speirs Maclean, M.D., D.P.H., late of Beechlands, Bridge Way, Chipstead, Surrey, aged 91.
Rashleigh.—On January 8, 1961, at Rashleighs, Throwleigh, Okehampton, Devon, John Cosmo Stuart Rashleigh, M.D., aged 88.
Seeds.—On January 2, 1961, at 5 Palmerston Park, Dublin, Arthur Atkinson Seeds, M.D., Lieutenant-Colonel, R.A.M.C., retired.
Wallace.—On December 22, 1960, at Jesselton, North Borneo, Edwin Herbert Wallace, M.B., Ch.B., D.O., Major, I.M.S., retired, of Greenacre, Langstone, Newport, Mon.
Webster.—On January 8, 1961, in hospital, Francis Lindsay Webster, M.B., F.R.C.S.Ed., of St. Anns, Lindfield, Sussex, aged 59.

Any Questions ?

We publish below a selection of those questions and answers which seem of general interest. It is regretted that it is not possible to supply answers to all questions submitted.

Corticosteroids and Obstetric Stress

Q.—*Should the stress of normal labour be considered an indication for additional corticosteroids (1) in a patient already taking an established dosage for a medical condition; and (2) in a patient who has had such therapy within the last two years? If not, what about a patient who suddenly requires an obstetric operation?*

A.—Normal labour subjects the adrenals to a degree of stress which approaches that of an operation. When pregnancy and delivery are complicated by excessive vomiting, infection, haemorrhage, anaesthesia, and operation, the stress increases. The woman who conceives while she is receiving cortisone for impaired adrenal function requires the same treatment during pregnancy. If, however, she is receiving cortisone merely for its anti-inflammatory effect, she is probably best weaned from the treatment slowly during the early months of pregnancy. The withdrawal will in part be compensated for by the increased endogenous production of hydrocortisone during pregnancy.

When a woman who is still taking, or has only recently discontinued taking, steroids enters labour or suffers any incident causing stress during pregnancy, she needs additional supportive therapy equivalent to 200 mg. cortisone acetate, intramuscularly, during each 24 hours. The duration of such treatment must vary with the indication, but, for labour, should not be less than three days. Hydrocortisone-free alcohol, hydrocortisone hemisuccinate, and prednisolone 21-phosphate act immediately when administered intravenously. Diluted in glucose-saline, and given as an intravenous infusion, controlled by blood-pressure readings, they are invaluable in covering emergency operations such as obstetrical manœuvres and caesarean section. Intramuscular injection is not an alternative route under these urgent circumstances; the rate of absorption from a muscle depot occurs too slowly.

In surgical circles it is generally reckoned that it may take two years for the adrenals to recover fully from the suppressive effect of a course of corticosteroid. The physiological stimulus of pregnancy to the maternal adrenals probably renders this safety margin excessive for normal labour at term. When, however, laparotomy or evacuation of the uterus is required early in the pregnancy of a woman whose adrenal function is at all suspect, she should be treated with cortisone, in the dosage recommended above, for 24 hours before and for 48 hours after operation. Even at term, when there is any doubt, there is much to be said for giving cortisone prophylactically during and after labour, especially if anaesthesia or surgery becomes necessary. It can do no harm and may prevent a catastrophe.

Treating Tapeworms During Pregnancy

Q.—*What is the most effective and safest treatment for tapeworm infection in (1) early and (2) late pregnancy?*

A.—The first thing is to ascertain the type of tapeworm with which the woman is infected. The vast majority of these infections, both in this country and overseas, are with *Taenia saginata*, which along with almost all other worm infections are best left untreated until pregnancy is over. Such infections have almost always been present for a considerable period and are not likely to give rise to trouble during the pregnancy, whereas to treat them may bring about abortion or other complications.

Taenia solium can easily be identified by counting the lateral uterine branches. Infection with this may give rise to cysticercosis, so that early treatment is advisable. In the first instance a dose of 5–6 g. dichlorophen ("antiphen") might be tried, and if it fails to eradicate the worm the more effective but more difficult to administer standard treatment with male fern (filix mas) should be given. Mepacrine is best avoided in this infection because of its tendency to cause vomiting, which would increase the risk of cysticercosis developing.

Differentiating Megaloblasts

Q.—*Is it possible by the microscopic study of a bone-marrow film to differentiate the megaloblasts of true pernicious anaemia from the megaloblasts of the "pernicious anaemia" of pregnancy?*

A.—It is not possible microscopically to differentiate between these megaloblasts.

NOTES AND COMMENTS

First-aid Manikin.—Mr. E. R. HARRISON (Smith and Nephew Ltd., Welwyn Garden City, Herts) writes: As distributors in this country and throughout the world, with the exception of Canada and the United States of America, of the "Brook" airway, we were interested to note the question and answer under the heading of "First-aid Manikin" ("Any Questions?" December 17, 1960, p. 1819). . . . Three training aids are available from this Company—the Brook manikin, a wooden cut-out demonstrator head, and a 16-mm. sound and colour film "That They May Live." . . . Whilst we must agree with the view you have expressed in the last paragraph of your reply . . . we would say that, so far as we are aware, there has not been reported a fatality with the Brook airway.

OUR EXPERT replies: I have studied the "Brook" airway and its application to oral resuscitation. From the point of view of mechanics I would say that this airway is satisfactory. The internal portion is not nearly so dangerous as in the original types and the external portion is certainly an improvement. Where it is available the apparatus would normally function efficiently. At the same time it suffers from the great disadvantage of other airways: it is not there at the right time.

Corrections.—Dr. T. J. Thomson has asked us to state that in his article with Dr. T. W. Parsons on "Methaqualone as a Hypnotic" (January 21, p. 171) the words "for tablet A" should be deleted from line 7 under the heading "Results" (p. 172). The completed sentence would then run: "In order to complete this study 28 patients were required, as 17 stated a preference and 11 'no difference' results were obtained."

In the description of the short-term controlled trial in the article by Drs. R. S. Bruce Pearson, J. H. Baylis, and H. C. Smellie on "Treatment of Chronic Asthma with Prednisolone and the Newer Steroids" (February 4, p. 315) the name of one of the bronchodilators used was wrongly given as phenoxymethazone. It should have read methoxyphenamine.

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